

GEORGIA INSTITUTE OF TECHNOLOGY
OFFICE OF CONTRACT ADMINISTRATION
SPONSORED PROJECT INITIATION

Date: April 25, 1980

Project Title: "Sting" Tape/Exploratory Analysis

Project No: D-48-644

Project Director: Dr. Eldon S. Miller

Sponsor: U.S. Department of Justice; Law Enforcement Assistance Administration

Agreement Period: From March 24, 1980 Until January 30, 1981

Type Agreement: Firm Fixed Price Order No. O-0511-J-OJARS, dated 3/21/80

Amount: \$9,970

Reports Required: Letter Report; Draft Final Report

Sponsor Contact Person (s):

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Defense Priority Rating: None

Assigned to: Architecture (School/~~Laboratory~~)

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SPONSORED PROJECT TERMINATION SHEET

Date 7/1/82

Project Title: "Sting" Tape/Exploratory Analysis

Project No: D-48-644

Project Director: Dr. Eldon S. Miller

Sponsor: U.S. Department of Justice; Law Enforcement Assistance Administration

Effective Termination Date: 1/31/81

Clearance of Accounting Charges: 1/31/81

Grant/Contract Closeout Actions Remaining:

None

- ☐ Final Invoice and Closing Documents
- ☐ Final Fiscal Report
- ☐ Final Report of Inventions
- ☐ Govt. Property Inventory & Related Certificate
- ☐ Classified Material Certificate
- ☐ Other _____

Assigned to: Arch. (School/~~Laboratory~~)

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January 13, 1981

Dr. Lawrence A. Bennett, Director
Office of Program Evaluation
National Institute of Justice
U.S. Justice Department
Washington, D.C. 20531

Re: Purchase Order No. 0-0511-J-OJARS

Dear Dr. Bennett:

In response to your letter of December 8, I want to clarify the current status of our work on the "Analysis of Sting Videotapes." Since Dr. Eldon Miller left our staff last summer, the work described in your Purchase Order Number 0-0511-J-OJARS has been actively pursued under my direction as Principal Investigator. Unfortunately, we have encountered several major delays.

The first and most critical delay was the fact that LEAA was not able to supply us with the videotapes to be used in the analysis as had been our expectation at the time we outlined our scope of work and work schedule. This situation was not made clear to us until early June, at which time we began to negotiate with the Georgia Bureau of Investigation (GBI) for the use of tapes which they had produced in conjunction with four "sting operations" in this state. By the time we reached an agreement with the GBI to use their material and met with the agents in charge of each operation to identify the specific "buys" to be studied, it was mid-July. On July 22, we received the first half of the tapes, with the remaining being obtained on July 29. This gave us 20 tapes for each of four operations, or a total of 80 tapes altogether. This completed Task "A".

Once we had possession of the tapes we found that the GBI cassettes were not compatible with our own cassette players. To avoid the inconvenience and expense of borrowing or renting compatible equipment, we made reel-to-reel copies of all tapes. This was completed by mid-August. At that time we began screening all of the recorded "buys" and listing descriptors of spatial and non-verbal behavior. By the time we began to get a feel for

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January 13, 1981
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this material prior commitments to arrange field work for a NIOSH-sponsored research project and to participate in an NSF-sponsored U.S.-Japanese Seminar on Environmental Psychology drew me away from the project. By the time I returned from Japan, the research assistant who had been working on the project graduated and we were without manpower until late November. Just before Thanksgiving we brought another graduate assistant onto the project who has been working ever since on the completion of the preliminary analysis called for in Task "B".

At this time, we have reached the point we had expected to reach last July. We have almost completed the preliminary analysis and are about to review this material prior to submitting an interim report and initiating a more detailed analysis. At this time, I am confident that we can complete a preliminary technical report covering Tasks "A" and "B" by mid-February and a final report covering Tasks "C" and "D" by the end of April. In the meantime, I shall provide you with monthly progress reports, on the 1st of each month, beginning in February.

So far, we have a few preliminary observations that I can pass on to you. First, with few exceptions, the quality of the video and audio images are relatively poor. In many cases the audio recording is so garbled that little sense can be made of the transaction. One of the reasons for the poor quality is the fact that the subjects are often off camera, despite diligent attempts by the GBI agents to maneuver them into camera range. Since one or more of the participants frequently are not visible, the possibilities for analyzing interpersonal synchrony or dissynchrony throughout the transactions are quite limited. However, we are looking at aspects of spatial behavior that might allow more effective camera placement to capture more of the interaction. If the camera angles do cover the complete transaction and if the quality of the video and audio images are equal to the best that we have seen, then a number of proxemic and kinesic patterns can be analyzed.

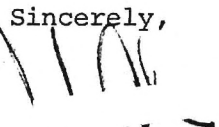
At present we are looking at the sequences of verbal, non-verbal, and spatial actions and reactions for the subjects who participate in two or more "buys" on different occasions. From our work thus far, we anticipate that we may be able to show systematic changes in the rhythm of the spatial and non-verbal displays from one occasion to the next and that many of these changes will be indicative of lessening tension and greater ease with the situation. We will report on this more extensively in the preliminary report.

I hope that this letter clarifies our continuing pursuit of this project and brings you up-to-date on our progress thus far. I regret the long string of delays cited to justify our inability to perform on schedule, however,

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given the limited fiscal commitment to this small project we seldom had the resources to accelerate our efforts, particularly once we encountered a number of prior obligations. With these points set forth, and with no further delays anticipated, I look forward to the timely completion of our work by the end of April. Unless we hear otherwise, we will proceed accordingly.

Sincerely,


John Archea
Principal Investigator

cc: Dr. John A. Templer

JA:cbm

Sincerely,


Carol A. Cook
GEORGIA TECH RESEARCH INSTITUTE

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ATLANTA, GEORGIA 30332

COLLEGE OF ARCHITECTURE
RESEARCH PROGRAM
(04) 894-3476

June 29, 1981

Dr. Lawrence A. Bennett, Director
Office of Program Evaluation
National Institute of Justice
U.S. Justice Department
Washington, D.C. 20531

RE: Purchase Order No. 0-0511-J-OJARS

Dear Dr. Bennett:

We are nearing completion of the work called for in the Purchase Order cited above. An outline of our final report is attached. This, together with four partially edited appendices (which may or may not be included in the final report) document our progress to date. At this point we plan only to complete our analysis of the spatial implications of the data reviewed and to complete the final report.

In order to complete our spatial analysis in the manner planned and to complete the preparation of our final report, I would like to request that we be granted an additional 90-day time extension, involving no additional cost to the Government. Should this be acceptable to you, I would anticipate submission of a final report in August.

I would also appreciate any comments that you might have on the outline and supplementary materials that I have attached.

Sincerely,

John Archea
Principal Investigator

CC: Dr. John Templer

Enclosure

SUMMARY OUTLINE

(1) Procedure:

Videotapes of 78 "buys" from 4 different "sting" operations conducted by the Georgia Bureau of Investigation (GBI) were reviewed.

- a. The tapes from two of the operations were selected by the agents who ran those operations.
- b. The tapes from the other two operations were selected at random by the Georgia Tech research team.

The general videotape quality and behavioral content of each "buy" was analyzed by visual inspection. A partially edited summary of this analysis is presented in Appendix A.*

The videotapes for 9 subjects involved in two or more "buys" at the same operation were then further analyzed by inspection to determine if any sequential patterns of behavior were apparent from one "buy" to the next. A partially edited summary of this analysis is presented in Appendix B.*

Finally a detailed analysis of seven categories of behavior was conducted for each subject (and their associates) who was involved in two or more "buys". In this analysis, the quality of the subject's behavior in each of the seven categories was recorded at ten second intervals. The categories coded included: activities associated with the transaction itself (discussion of money, etc.), whether the subject was on or off camera, voice volume, body position, body movement, hand movements, and smoking or any other stereotypic behavior. A partially edited presentation of this analysis appears in Appendix C.*

(2) General Findings on Videotape Quality:

Long periods when the subject was off camera were found in many, if not most, of the tapes. Although a handful of subjects were on camera 100% of the time, the average for all of the "buys" subjected to detailed analysis was 70.49% of the duration of the "buy". Although 9.80% was the least amount of time a subject was found on camera, total exposures of less than 35% were not uncommon. The average percentage of time that the subjects were on camera varied among the 4 operations, as follows:*

Augusta.....	79.11%
Atlanta.....	73.39%
Albany.....	62.61%
Brunswick.....	48.69%

Two of the operations studied used fixed cameras while the other two operated the cameras to track the activities of the primary subjects. The average amount of time on camera varied between these two types of operations as follows:*

Fixed Camera; Atlanta	
and Brunswick.....	64.00%
Moving Camera; Albany	
and Augusta.....	77.71%

Note that the data above are for the primary subjects and their associates, each considered separately. Because the percentages on camera were so low, no further attempt was made to determine the percentage of time that one or more of the principal actors (including the agents) were off camera. However, from inspection it appears that the proportions of time that all of the inter-

actants are on camera are typically far lower than the 2/3 and 3/4 ratios for fixed and moving cameras indicated above. In some cases the moving camera seemed more likely to lose one or more of the interactants beyond camera range as it focused in on the principal subject, than the fixed camera.

In one operation the camera was concealed by a one-way mirror surrounded by provocative photographs that were intended to lure the subjects into close camera range. When this occurred, the presence of the subject in the foreground usually obstructed all of the other activity in the room.

In almost every "buy" studied, the videotape does not start until the subject is already in the room and the negotiation already in progress. In some cases (particularly short transactions) this lack of information about initial entry and greeting makes it very difficult to comprehend what is going on.

In general the videotape quality, in terms of resolution and contrast, is poor to fair. It is rarely good enough to be certain of small body movements or the passing of goods without reviewing the tape several times. In several cases this poor tape quality seems to be attributable to the understandable attempt to use "typical" levels and sources of illumination for the type of setting being used. Generally the poorest tapes came from operations in a warehouse and a private home, whereas the best tapes came from retail set-ups. In some cases it wasn't even possible to determine the sex of the subject (see Appendix A).

The audio quality was also rather poor in two of the operations.

This was particularly the case in the warehouse set-up where the subjects often wandered out of microphone range.

(3) General Behavioral Observations:

The analysis of a subject's interpersonal behavior during any single "buy" is situation-specific and often involves a number of variables that are not accessible using videotape records alone. However, recent advances in the study of kinesics and proxemics have raised the possibilities of studying certain aspects of interpersonal behavior without the need to consider extraneous archival data. Unfortunately, most of the methods that have been developed would require visual records that are of a much higher quality than those considered here. The difficulties in pursuing each type of analysis are itemized below.

Eye contact and non-verbal gestures are difficult to detect on the sample of videotapes studied because of the generally low resolution and low contrast on the tapes themselves and because one or more of the principal interactants was often off camera.

The initiation and reciprocation of verbal and non-verbal cues was also difficult to consider. The poor quality of the video and audio portions of the tapes were major difficulties. In addition, the facts that many of the tapes started after the transaction began and that some of the key actors were often off camera also contributed to the difficulty. In effect, the tapes often fail to capture the full interpersonal context needed to comprehend each actor's role in the transaction.

Patterns and sequences of interpersonal distancing were difficult

to comprehend because of the late starting cameras and the frequent absence of one or more of the key actors within camera range. Without knowing how the agent(s) positioned himself when the subject first entered, it becomes difficult to establish whether the subject's actions are cause or effect. When one member of an interacting dyad is off camera, the question of interpersonal distancing becomes virtually moot.

The individual strategies for locating and orienting in order to see or be seen is difficult for the same reasons just listed above. In addition, the fact that much of the space is out of range for both the fixed and moving cameras means that the focus of attention cannot always be established.

The use of props as displacement mechanisms can be monitored while the subject is on camera. However, the meaning of such data can only be assessed in conjunction with the analysis of other patterns of behavior which appears to be problematic.

In general the quality of the videotapes studied precludes most types of detailed analysis of interpersonal cueing and synchrony. Recommendations for improving videotape coverage and quality so that some of these types of analysis might be possible are given in Section 6 of this report.

(4) Analysis of a Series of "Buys":

The key issue in studying "buys" by the same subject on repeated occasions is to determine whether or not any type of social bonding develops between the subjects and the agents, or whether they develop any strategies for coping with one another. It has already

been noted that a detailed analysis of these two issues would require videotape of substantially higher quality than that reviewed here. However, events in a series present several additional factors which can be considered.

The length of buys on repeated occasions could serve as an indication of the level of trust that has developed between the subjects and the agents. Unfortunately, our detailed analysis failed to reveal any consistent patterns. The lengths of the buys tended to increase from one to another as often as they tended to decrease. Although the buys ranged in duration from 1:00 minutes to over 28 minutes, the only behavioral factor that seemed to affect the duration was the nature and quantity of the merchandise offered for sale and the buyer's or seller's agenda for manipulating the price.

There did appear to be some relationship between the average duration of the "buys" and the quality of the spaces in which the operations were set up. (see Appendix D for the floor plans of three of the GBI operations studied *). In general, the longer buys tended to occur where the selling spaces were fairly large and the subjects were steered toward locations from which they could see the rest of the operation. The shorter buys tended to occur in the smaller selling spaces where the subjects were often led to seats from which they could not monitor certain entry points or adjacent spaces. These differences are indicated by the following "average lengths of buys" (refer to the plans in Appendix D):

Atlanta (fairly open).....	8:40
Augusta (very open).....	8:20
Brunswick (very tight, cramped)....	5:30
Albany (many concealed spaces).....	4:40

Lingering after the buy also seems to be related to spatial factors.

In fact, most of the differences between the total lengths of the transactions in the open and cramped spaces seems to be attributable to "hanging around" after the deal has been completed. The averages for each of the four operations were as follows:

	<u>time to sale</u>	<u>time after sale</u>
Atlanta.....	6:40.....	2:00
Augusta.....	5:50.....	2:30
Brunswick.....	5:10.....	:20
Albany.....	4:25.....	:15

Although the poor tape quality precluded detailed kinesic and proxemic analyses, it does appear that there may be some gross effects of space on the conduct of "sting" transactions and that such effects are amenable to study using videotape.

In general it appears that the subjects may be more at ease in relatively large spaces in which they can see everything that's going on than they are in smaller spaces where they cannot see everything that's happening around them.

(5) Potential Research Applications:

Kinesic analyses of subtle non-verbal patterns of cueing and synchrony would be possible only with much better tape quality (contrast and resolution) and with camera placement where more of the activity could be recorded. Even then, only the grossest of movements would be subject to detailed analysis.

Proxemic analyses of spatial apportionment would be enhanced by more complete recordings of the full socio-spatial context, in-

cluding starting the camera before the subject enters the space and covering a greater portion of the space so that interactants are less likely to venture out of camera range. Proxemic analysis would also be enhanced by the placement of discernable spatial markers on floors or walls. With complete camera coverage and spatial demarcation a full proxemic analysis should be possible.

Visual Access and Exposure (the amounts of space one can see and be seen from) analyses are already partially feasible given the quality of the tapes reviewed. It would be greatly enhanced by better spatial coverage than was found on the GBI tapes. This would not only reduce periods where one or more interactant is off camera, but it would also facilitate the identification of each participant's focus of attention. A complete analysis of the impact of visual access and exposure on spatial behavior also requires that accurate floor plans of the spaces be available.

Behavior Setting analyses of the degrees of penetration and participation in the setting would be partially feasible with the quality of the tapes reviewed, if the tapes were started before the subject entered the selling room. Such analyses would be greatly enhanced by better spatial coverage by the camera and by better audio quality in the larger spaces.

In general, the potentials for analyzing the fine details of interpersonal transactions in "sting" operations and for tying those details to the full spatial context seem quite limited, given the quality of the videotapes reviewed.

However, with relatively few changes in the spatial and technical

aspects of "sting" operations, videotapes of a much better quality for fine-grained behavioral analyses can be obtained.

(6) Operational Recommendations:

There appear to be several conflicts between setting up a "sting" operation to assure the correct identification of each suspect and in setting it up to capture the full complexity of a socio-spatial situation.

- a. Identification requires relatively close shots of the subject's face and participation in the exchange of money.
- b. Situational analysis requires comprehensive visual coverage of all portions of the setting at all times.

It appears that these conflicting objectives can often be resolved within a single set-up.

To assure more complete spatial coverage in order to increase all interactant's time on camera one of two strategies can be used:

- a: Place the camera at the end of an elongated room or at the corner of a square room to assure that the maximum amount of space is included.
- b. Try to steer the subjects to the opposite end or corner of the space so that they too will enjoy a full view of the things going on around them.

In order to assure full coverage it will be as necessary to lead the subjects to a point from which they feel they can be aware of their surroundings as it will to place the camera at a point from which the whole space can be seen. In general, the subjects should be located where:

- a. They can see into most of the spaces that surround them, and...
- b. They are unaware of places from which they can be seen or approached, but which they cannot see into.

In the last regard, it would generally be helpful to avoid doors out of the selling space that lead to rooms that the subjects cannot enter or see. One recent study of bank robberies revealed that bank robbers would not enter banks with doors leading to unknowable spaces. The same type of discontent may apply to subjects trying to sell stolen merchandise, who might be "spooked" by closed doors or continuing corridors, and who might adjust their location and orientation accordingly.

Lighting quality should be improved to provide a higher degree of figure to ground contrast and to permit the video equipment to operate at its most efficient (highest resolution) level. In some cases this may require the selection of "front" operations that normally have higher lighting levels than private homes or warehouses. It is also important that the lighting be set up to reveal the full details of the subject's face and actions and that backlighting conditions don't develop which could "burn" out the video image.

The cameras should always be started before the subject enters the selling space. If a particular recording turns out to be a false start, it can always be erased and re-cued.

With improved spatial arrangements, the quality and coverage of the video image should be sufficient to permit a full range of

behavior setting, access and exposure, or proxemic analyses of "buys" recorded during "sting" operations. Due to the high degree of resolution required, 16 mm. film would probably be a better medium for kinesic analyses.

Some forms of proxemic and access/exposure analyses may require supplementary spatial markers on the floors or walls of the selling space.

* The names of the cities and individuals included in the GBI operations will be altered in the final report to protect their identities.

APPENDIX A

TAPE #1

ATLANTA

END #

BUY

154	1	1004	5	Male and female subjects seem a little nervous. They stand back from the agent, who sits on the front of the desk. A deal is finally made.
356	3	1006	7	<u>Bob</u> - Seems very cautious. Stands away from the agent. I believe he looks around a bit but it is difficult to tell because he stands off camera. There is much casual talk. The agent and Bob appear to feel each other out on where they stand. Bob becomes much more relaxed as time goes by. He seems more relaxed after the deal is made.
393	3	1009	10	They get right down to business. The subject stands in front of the desk. He is not relaxed. The deal does not take long.
459	4	1011	12	The subject is sitting on the edge of the couch talking to the agent who is sitting back. Subject gets up and describes how he stole the credit cards. This is a good tape, much laughing. The deal is made.
End	5	1017	18	The subject appears to be a girl. She spins around with her arms out when she comes into the room. I'm not sure why. She stands in front of the desk with her hands in her pockets. The agent does most of the talking.

TAPE #2

333	6	1021	22	One black male (much talking).
*	7	1038	39	(Tape no good.)
440	8	1005	6	Two black subjects - they appear a little nervous. This is a good tape with much activity and much haggling. <u>Slim</u> and <u>Jim</u> .
40	9	1008	9	One black male who is smoking a cigarette. Sound quality is very poor. (Spills over on Tape 3)

TAPE #3

END #		BUY	
(Not far) 9	1008 (Continued)	9	A great deal of talk - I am not sure just what is being said. <u>Bob</u> - has a mustache.
430 10	1007 (2 tapes)	8	This subject appears very relaxed. He is no hurry. It appears he brought in a great deal to sell and there is much haggling. The GBI agent makes a phone call and I am not sure what was said. Two phone calls were also received. <u>Bob</u> .
478 11	1010	11	The subject's name is <u>Slim</u> , a black male. There is a great deal of joking and laughing. He is very short.
End of tape 12	1018	19	<u>Bob</u> - mostly uneventful. The subject sat on the couch most of the time.

TAPE #4

45 12	1018	19	" " " "
89 13	1019	20	<u>Bob</u> (a.k.a. James Williams) - came in very quickly and got right down to business. Deal was made very quickly.
14	1023	24	<u>Parnell Lee Brown</u> - Subject seems a little uneasy. Takes out cigarettes as soon as the tape starts. This subject does the minimum amount of talking. Only one card was sold.
351 15	1024	25	<u>Ronald Brown</u> - The first part of this tape is confusing. The subject leaves in a hurry and there is a long span when no one is on camera. The tape machine cuts off and comes back on when the subject reappears. He talks about drugs and the business of selling credit cards; the sale takes a long time. (One card)
456 16	1026	27	<u>Tony</u> - Tony sits on the edge (arm) of the couch, he seems very comfortable. The agent explains the operation to Tony in terms of what they expect. They talk a long time before a deal is made; several cards were bought.

515 17 1027 28 Ann (Luce) B/F - She sits down on the couch and smokes a cigarette. The deal is made fairly quickly.

End 18 1028 29 Ann B/F - Appears to be the same girl. Again she sits in the same spot on the couch.

TAPE #5

116 18 1028 (Continued) 29 Ann - She brought in many cards this time which could not be bought. She does not seem as relaxed this time. The GBI woman sits in on this deal but lets the black GBI man talk. Ann wears a hearing aid.

303 19 1036 37 Sam (Luce) ? - W/M. Comes in and stands in the middle of the floor. The two GBI male agents get together and look the credit cards over. Sam stands out of camera range much of the time. He has to go out and get change, which puts him in an awkward situation; the black GBI agent kind of puts him on the spot. Sam is from Canada. He finally relaxes enough to sit down on the couch after the deal is made. The black agent talks awhile with him. Sam rolls a joint!

20 1038 39 Pretty Tony - The agent and Tony are sitting on the couch; the agent is reading the paper and drinking coffee. The female agent enters the room and has the male agent light her cigarette. Tony seems relaxed.

20 1038 39 They talk casually (this seems to be a good tape). Things are very relaxed. It takes a long time before Tony gets the credit cards out, of which he has a number. Tony even gives his address and home phone.

TAPE #6

235 20 1038 (Part II) 39 This is the longest buy. Things are so relaxed Tony does not want to leave. After awhile the agent appears bored. The tape ends before he leaves.

E N D A T L A N T A

Begin Albany, Georgia

Tape 1006 (Don't have this. Buy 28 is in the package.)

TAPE #6 (Continued)

- ALBANY -

<u>END #</u>		<u>BUY</u>	
262 1	1007	2	Black male with glasses - silver rims. Sells a stereo 8-track car player and ear radio. Name ? The tape starts late and little of the buy is shown.
336 2	1008	3	<u>Lon</u> (or Ron) - B/M. Comes in with a typewriter. There is a small disagreement over price, and subject feels he needs to get another opinion. He gets out the phone book and finds a number and places a call. The party is not there so he calls information. Meanwhile the agent is making offers all along. The subject finally accepts and stops trying to use the telephone.
390 3	1010	5	One black male comes in with a grocery sack full of stolen merchandise. The buy is mostly uneventful. <u>Contact</u> is the name he uses. Property includes 2 8-track tapes and one C-B radio.
529 6 (End)	1011	6	One black male comes in with a color TV. The subject claims it is his TV. (?) Agent offers him \$25 and he turns it down, and they begin haggling. Subject wants \$35 and one ounce of Colombian! <u>Troy</u> is his name.

TAPE #7

144 5	1013	8	Two black males enter with a rifle .308. Agents offer \$30. One sits on the couch and the other sits in cluttered chair. One who does dealing sits on couch - <u>How</u> is his name I believe.
223 6	1014	9	Two black males come in with a rifle and golf clubs. The deal is made fairly quickly. <u>Moe</u> and <u>Melvin Hill</u> are their names.
7	1015	10	One white male brings in rifle. Deal was made fast and subject even tells agent where he lives. His name is <u>John Hall</u> .
343 8	1016	11	One black male enters with rifle. Subject seemed a little shy and very few words were exchanged. <u>Sid</u> .

END #		BUY	
388 9	1017	12	One black male named <u>Will</u> came in with a TV and a radio. He sat on the couch and seemed mad about the deal but accepted it. Leaves without a word.
480 10	1020	15	Two black males bring in a pistol. The deal is made fairly fast with a good bit of laughing and joking. This deal takes a long time compared to the others. <u>Red</u> and <u>Lorenzo</u> are their names.
542 11	1029	24	One black male enters with a hand-held, two way radio. The deal is made fast, the subject never sitting down. The agent and subject stand and talk for awhile. <u>Carl</u> (?)
620 12	1030	25	Two white males are already seated as the tape commences. They seem relaxed; one thumbs through a magazine as he deals. The other gets restless and walks around the room a little. There is a lot of joking and laughing. I think it is a ring that is being bought. No names are mentioned.
661 13	1035	30	Subject is a white man who appears nervous. <u>Amos</u> . He sells a ring and the deal is made quickly. Amos never sits down.
694 14	1033	28	One black man brings in a gun. He does not sit and makes the deal quickly. <u>Raymond Moore</u> .
850 15	1037	32	Two black men. Agents help them bring in their stolen goods, among them a TV and mimeograph copiers. Agents give the men a beer. The agent has to use a calculator to add things up, which takes awhile - this is a large buy. The agent pays \$210 for everything. They talk for awhile and then payment is made. <u>James and Donald Hays</u> . Includes five TVs and other school equipment.
16	1052 Part I	47	2 white males. They bring in TV, 8-track tape player, and one box of tapes (8-track).
	<u>TAPE #8</u>	<u>ALBANY</u>	
043 End	1052 Part II	47 Cont.	(John) <u>William and Wesley</u> . There is a little dealing but for the most part, the buy is uneventful.

<u>END #</u>		<u>BUY</u>	
189 17	1055	50	(John) William and Wesley. Bring in an air compressor and grinder. (We have seen this tape.) Also produce a drill press, saw, and sander. They haggle a little but make the deal.
202 18	1059	54	The agents messed up this tape. The buy is nearly made before the tape is put on; there is no dialogue after the buy and a description of the subject is not given. Subject is a black male.
681 19	1057	52	One black man and two black women. Agent offers them all beer. They do not bring in stolen merchandise initially but have to fetch it from the car. When the agent leaves with the male to haul in goods, one of the girls lights up a joint and shares it with the other. While they smoke the agent and the black man take a long time to return. When they do there is much haggling but a deal is finally made. They leave but the man comes by later; he and the agent whisper together before he brings in his friends, two black men. The women do not come back. They drink beer and money is exchanged. (Still don't know what has been bought.) Don't know their names.

E N D A L B A N Y

AUGUSTA

There is a tracking problem with some of the Augusta tapes.

740 1 End	1269	3	White male comes in with tires and rims to sell. Very difficult to hear what is said, there is so much talking. <u>Wain</u> is his name. The buy is mostly uneventful.
856 3	1270	4	<u>T-Bo</u> selling a tool set. There is much talk and they take their time looking over the tools. T-Bo was a Sears employee who was stealing tools and selling them through this operation. He even leaves his home address.
End 3	1271 Part I	5	T-Bo is back at 12:45, about an hour later. He sells 12 saws.

TAPE #9

145 3 End	1271 Part II	5	T-Bo seems very relaxed; he has also changed clothes. They talk a long while. A black girl comes in, I don't know who she is but she seems to know T-Bo.
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END #			BUY	
265 End	4	1272	6	T-Bo is back again; he sells an impact wrench and an electric drill. The agent leaves for awhile at first and T-Bo wanders around. This time a different agent deals with him and looks over the wares while T-Bo sits on the edge of the desk. T-Bo writes something else down.
482 End	5	1275	9	The subjects, two white males, back their car inside and dealing is done around the car. The deal takes a long time and the two men mill around while the agent answers the phone. They are selling an air conditioner, which is finally removed from the trunk. <u>Ray</u> and <u>Wade</u> (?)
	6	1277	11	Items sold: two stereos and a hand-rolled cig. Subjects are two white men and a fat woman, who looks over the place. The agent leaves for awhile and the two men sit down while the woman continues to look around.
597 End	6	1277	11	The long-haired young man from buy 9 comes in. The other two subjects are the same two men from buy 9. They sit there for quite some time and talk. I still don't know who the fat woman is.
609	7	1278	12	<u>Wade</u> sells a tape player. A woman is wandering around yelling, I don't know who she is. The deal is made with Wade confidentially. The woman is obnoxious and makes an ass of herself; they tape her walking around afterward but I did not include it in our tape.
633	8	1285	19	A black male named <u>Robert</u> and another named <u>Kurt</u> sell a tape player. They don't sit and the deal is made rapidly.
732 End	9	1286	20	<u>Kurt</u> sells an electric organ. The organ is already inside before the tape begins. Things are very relaxed, and the agent leaves for awhile with Kurt left standing there. The tape only shows one subject, and a deal is finally made.
806 End	10	1287	21	<u>Kurt</u> and <u>Robert Lance</u> bring in a color TV. This time they sit down while the agent examines the TV. They seem relaxed and talk for a long time; they finally make the deal. Kurt and Robert called before they came over.

END #

BUY

End 11 1288
Part I

22

Robert and Lance are back! They sell another TV, which they put in the back out of camera range. It is the same kind they just sold; they bring it back to the desk and sit down. This time they are drinking beer and sitting and talking. One flips through a magazine. They haggle a little over price.

END TAPE #9

TAPE #10

AUGUSTA

029 11 1288
Part II

22

After the deal is made, Robert and linger and talk and finally leave.

173 12 1289
End

23

____ sells a tape player. The tape starts with them sitting there and not speaking. It appears they are waiting for someone. They make the deal.

259 13 1290
End

24

Steve West and Charles Lance. They sell a plastic bag of pot and two stereos. The agent looks over the pot. Subject stands with his hands on his hips. Charles comes in a little later with the stereo. The deal is made quickly.

498 14 1291

25

T-Bo sells a Router and Router Bit Kit. (?) When the tape starts T-Bo is already there and his wares have to be unboxed. They take a long time looking over what he brought in and a deal is finally made. (T-Bo's deals always seem to take a little longer than others.) Roscoe comes in near the end of the deal and after it is completed they all talk awhile. T-Bo plays with a football while he talks. (This tape is long.)

End 15 1292
Tape 10 Part I

26

Wade sells bags of GLM (?) (pot). He sits in front of the desk and places the pot on the table for inspection. He seems relaxed; the deal is made and they sit and talk.

TAPE #11

End 15 1292
Part II

26

Wade gets up and leaves.

END # BUY

180 16 1293 27 Kurt sells two color TVs. His car is already inside and he looks around in the trunk and shuts it. The TVs are already on the couch, the agents examine them to see if they work or not. They ask him what his last name is and he tells them. The deal is made and Kurt leaves.

321 17 1294 28 Steve West, Wade and Charles - they're selling two washers, a cassette recorder, electric dryer, TV stand, shave master, and vacuum cleaner. The agents inspect the wares closely. There is a break in the tape and the agents are shown at the desk scrutinizing the cassette recorder. They plug in the washer to see if it will work. The agent jokes when the defendant brings out the electric shaver. A deal is eventually made. Wade called before they came.

364 18 1295 29 Lee sells a shot gun. He is an older white male. They talk a little and he decides to use the phone. The shotgun is wrapped up in a blanket and out of sight.

End 19 1316 50 Wayne Coleman is selling variety of office equipment. When the tape commences Wayne's car is inside and they unload it, which takes a long time. They all sit down to deal.

#12 192 19 1316 28 There is a lot of conversation and the deal takes a long time to finalize. They go over by the car and talk. The tape ends and there is no dialogue afterwards.

394 20 1338 72 T-Bo, Gene and Melvin are selling a color TV. A truck is there and they unload the set. They stand around it and look at it and deal. They all seem relaxed and complete the deal. Standing near the truck they talk for quite some time. They shake hands with the agents and depart.

E N D A U G U S T A

S T A R T B R U N S W I C K

526 1 1203 4 Charles and ?
Two black men sell a stereo, asking too much for it. They haggle for a long time.

2 1208 9 Two black males - not sure at first what is for sale. In a friendly way they haggle over price.

TAPE #13

<u>END #</u>			<u>BUY</u>	
069	2	1208 Part II	9	The subjects keep haggling and the situation grows a little more tense. They are selling a stereo receiver. Names were never mentioned.
188	3	1210	11	Three black men are selling a record player and speakers. They are not happy with the agent's offer and there is much impatient talk. They make the sale but are unhappy with the price. They also sell a TV; don't know their names.
266	4	1211	12	<u>Larry and Farrell and Charles.</u> They are selling a TV; the agent photographs the TV while they are standing there. One tries to sell his watch but the agent declines.
345	5	1212	13	There is trouble with the beginning of the tape. Two black males sell a TV and a record player. They seem very "cool," if you know what I mean. A quick deal is made, there's a little laughing and they depart. <u>Harry McDonald</u> and someone else.
400	6	1213	14	Two black males sell a TV, tape player and turntable. The agent gives them a line conveying that he cannot pay too much. There is much haggling, they make a deal but are not happy with it, and they leave. <u>Charles Mc Donald</u> and ?
449	7	1214	15	Two black men bring in a large TV. One is <u>Charles McDonald.</u> They haggle about the price but make a deal without incident.
495	8	1215	16	One black man, <u>Joseph Moody</u> (Pork Chop), presents a tape player. They deal but he does not seem happy with it; finally they make an arrangement. He sits on the couch most of the time.
540	9	1216	17	Two black men. <u>Wes (or Web) and Larry.</u> One sits down, the other stands up. They deal over a CB radio.
	10	1217 Part I	18	<u>Larry</u> is back with two more CBs.

TAPE #14

019	10	1217 Part II	18	<u>Larry</u> is 19 and the black agent seems to encourage him to keep dealing. The deal is made quickly.
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TAPE #14

<u>END #</u>			<u>BUY</u>	
069 11	1218	19	One black man named <u>Joe Williams</u> sells a CB radio. The deal is made fast and he leaves immediately afterwards.	
277 12	1221	22	Two black males <u>Charles and Terrance McDowell</u> . One of the agents scolds a subject for being careless about being seen. They bring in a TV; there is much haggling and things become heated. They talk about a future deal and finally make a deal on the TV. This is a good tape.	
398 13	1233	34	Two black women and two black males. They produce a stereo and turntable. One girl reads a porno magazine. The agent does most of the talking. A girl goes to the bathroom. The two men deal with the agent while one of the women cleans an ashtray. The male subjects go back to their car and get a TV; they make a deal and leave. <u>James Eddie and John Raymond, Diane and Victoria.</u>	
414 14	1235	36	<u>Jerry and Terrance.</u> The entire deal was off the tape, very little overall was taped.	
450 15	1238	39	One black male (another was out in the car). Sell a TV, a camera and a clock. The deal is made very fast. <u>MacDowell.</u>	
473 16	1234	35	Two black men sell a TV. The deal is made quickly. Agent warns them about bringing in bad business. <u>James (Eddie) and John.</u>	
End 17	1236	37	Two black men bring in guns, cameras and a TV calculator. The agent checks the guns. They make a fast deal and everyone appears pleased. They leave; I don't know their names.	

TAPE #15

104 18	1237	38	One black male brings in a pistol. As they deal there's a knock on the back door and they quickly settle on the pistol. I don't know who was at the door. <u>Jerome Smith.</u>
201 19	1239	40	One black male sells a radio/record player set. Subjects stands off to the side and agent urges him to "come on into the house" to move him into the room. They haggle awhile over the price

TAPE #15

<u>END #</u>		<u>BUY</u>	(Continued)
201 19	1239	40	and the subject (<u>Charles Miller</u>) leaves immediately after making the deal. The agent offers to "flip" for a final \$5 price.
283 20	1259	60	Two black males bring in a CB. They make a quick deal and leave. Larry and "T".

E N D

APPENDIX B

ATLANTA Bob - Also known as James Williams

07 7 - Bob's first buy: He seems very cautious, standing away from the agent. I think he looks around to check things out, but it is difficult to tell because he stands off camera a good deal of the time. The agent and Bob feel each other out on where they stand; Bob is more relaxed when the deal is made. He stood out away from the desk in the middle of the room most of the time.

07 8 - Bob brings in a sack and has a matchstick in his mouth. He appears very relaxed and stands in front of the desk, not looking around the room. He backs from the desk a good bit and out of camera range. This buy is much longer than usual for Atlanta. He is in front of the desk the entire time.

07 9 - Bob stands by the front side of the desk. He does not appear nervous. He looks around the room. The deal is made fairly quickly and he leaves.

07 19 - Bob sits on the couch very relaxed. He sits on the edge of the couch closest to the desk. He does not gaze around the room.

07 20 - Bob comes right in and stands in front of the desk. The deal is made very fast.

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BUY 9 - Bob stands by the front side of the desk. He does not appear nervous or look around the room. The deal is made fairly quickly and he leaves.

BUY 19 - Bob sits on the couch very relaxed. He sits on the edge of the couch closest to the desk. He does not gaze around the room.

BUY 20 - Bob comes right in and stands in front of the desk. The deal is made very fast.

ATLANTA Jim

BUY 6 - Jim is very active and looks around a great deal, trying to deal and look around. His friend Slim stands there and deals with the agent until he has to go to the rest room. Slim comes back and sits on the couch with Jim. There is much jiving and talking. They move off the couch when the agent says that he does not want to give them "shit" and wants to be straight with them.

BUY 11 - Jim seems a little nervous. He stands in front of the desk during the entire buy. Finally he relaxes. When leaving he stops in the doorway and turns around and talks to the agents and exits.

The agent explains what he can and cannot do. She sits forward and seems a little tense. A deal is made and she leaves.

BUY 22 - Ann sits in the same position and again does not sit back. The female agent comes in and delivers some money. She leaves but the agent calls her back. The female agent sits on the other end of the couch. Ann still does not appear relaxed and she leans way forward while the agent looks over the cards. A deal is finally made and Ann leaves.

ATLANTA

Ann

BUY 28 - Ann, a black female, comes in and sits on one end of the couch.

The agent explains what he can and cannot do. She sits forward and seems a little tense. A deal is made and she leaves.

BUY 29 - Ann sits in the same position and again does not sit back. The female GBI agent comes in and delivers some money. She leaves but the agent calls her back. The female agent sits on the other end of the couch. Ann still does not appear relaxed and she leans way forward while the agent looks over the cards. A deal is finally made and Ann leaves.

ATLANTA Pretty Tony Wesley

TAPE 4 357

BUY 27 - Tony sits on the arm of the couch most of the time. The agent and he talk about what is expected of one another. Tony seems relaxed but there appears to be tension in the air. Tony finally sells some stolen cards.

BUY 28 - They bring in an air compressor, it is a very similar situation as before. Wesley does a sales job on the equipment, assuming the same position in the room as before. William is in the corner of the room making a phone call but evidently does not go through. They make a deal and leave.

BUY 39 - This tape features one of the most relaxed buys of all. The agent sits on the right hand side of the couch reading a paper, Tony sits on the other end.

The female agent comes in and the male agent lights her cigarette. They socialize before Tony hands the cards over for inspection; all the talk is very light and friendly. Most likely Tony has made several subsequent visits. He writes something down on paper and roles a cigarette or a joint - the conversation goes on for a long time. Tony pulls out all his credit cards and shows them off to the agent; they talk in the same position for the length of the tape. The agent looks as if he is growing bored.

TAPE 7 & 8

BUY 47 - William and Wesley apparently have visited before. The fat one (Wesley I think) oversees the inspection of the goods; he does not sit down. I couldn't see William until the payment was made.

BUY 50 - They bring in an air compressor, it is a very similar situation as before. Wesley does a sales job on the equipment, assuming the same position in the room as before. William is in the corner of the room making a phone call that evidently does not go through. They make a deal and leave.

BUY 51 - A different agent deals with T-Bo this time. T-Bo does not sit down. The agent stands for a few minutes and T-Bo wanders around, looking the place over. The agent reaches the cashbox the goods. T-Bo continues to stand and finally sits at the edge of the desk, finalizing the deal while he sits there. After the deal is made T-Bo writes something down on a paper and gives it to the agent. He is very busy with the deal and departs.

BUY 52 - T-Bo sits himself in front of the desk and removes the contents of the cashbox. He is talking while the agent investigates the goods and helps him. Before the deal is made the other agent walks in and sits at the desk. After which the deal is made. T-Bo backs off from the desk, picks up the cashbox and walks away while conversing with the agent. When the agent sits at the desk, T-Bo walks away from the desk so that his back was not to the agent. He is not in a position where he could see both agents at once. Yet he is like a hawk with the money now, trust has been well-established. The agent who was in the room gets up and moves off camera. T-Bo remains where he is and continues to play with the football. The tape ends before he leaves.

BUY 53 - T-Bo comes in with two other friends. Two agents are present. T-Bo and his friends come in with a truck in and they unload items from it and look at them. The agent goes underneath the truck. I'm not sure if the other two have seen the cashbox or not; they all stand there and negotiate. A deal is made and the cash is exchanged. It appears T-Bo brought his friends to the desk and the agent is in the truck while the other two talk with the agents. After the deal is made, there is a lot of milling around and talking, but it is impossible to tell what is going on. Things appear to be breaking up the tape ends.

AUGUSTA

T-Bo

TAPE 8 Begin 740

BUY 4 - T-Bo seems very serious. He sits on the edge of the desk and does not look around too much. When the tape begins he is already on the edge of the desk and stays there the entire time. When the agent produces the money to pay him, T-Bo rises to receive it. They stand and talk for awhile after the deal is made. T-Bo seems very happy with the whole set-up.

BUY 5 - T-Bo situates himself in a chair in front of the desk. He slumps in the chair, i.e. he sits way back and does not look around. They do not seem to be dealing. The agent explains his position and how he must deal; T-Bo obviously is very comfortable with the set-up. In fact, they were dealing and sealed a deal. A black woman enters just after the money was passed, I don't know who she is.

BUY 6 - A different agent deals with T-Bo this time. T-Bo does not sit down. The agent leaves for a few minutes and T-Bo wanders around, looking the place over. The agent returns and examines the goods. T-Bo continues to stand and finally sits on the edge of the desk, finalizing the deal while he sits there. After the deal is made T-Bo writes something down on a paper and gives it to the agent. He is very happy with the deal and departs.

BUY 25 - T-Bo situates himself in front of the desk and removes the contents of a box. He remains standing while the agent investigates the goods and helps him in looking them over. Before the deal is made the other agent walks in and sits on the couch, after which the deal is made. T-Bo backs off from the desk, picks up a football and tosses it while conversing with the agent. When the agent sat on the couch, T-Bo moved away from the desk so that his back was not to the agent. and he was in a position where he could see both agents at once. Yet he is like old pals with the agents now, trust has been well-established. The agent who came in and sat on the couch gets up and moves off camera. T-Bo remains where he is and continues to play with the football. The tape ends before he leaves.

BUY 72 - T-Bo comes in with two other friends. Two agents are present. T-Bo and his friends have brought a truck in and they unload items from it and look at them on the floor just beneath the truck. I'm not sure if the other two have been in the warehouse before or not; they all stand there and negotiate. A deal is made and the money is exchanged. It appears T-Bo brought his friends to the place - one remains in the truck while the other two talk with the agents. After making the deal there is a lot of milling around and talking, but it is impossible to tell what about. When things appear to be breaking up the tape ends.

AUGUSTA

Ray and Wade

BUY 9 - Ray and Wade back their car into the garage and position themselves around the car. The long-haired guy looks around while smoking a cigarette. I can't hear what's being said. When the agent leaves the two guys stand together and look around. They walk around exploring while training their attention on the agent who is on the phone. The agent stays on the phone for some time and the two subjects keep milling around. Eventually the agent directs them to get the air conditioner out of the trunk. The other agent returns and begins to deal and pays the fat one. They move to the desk and the long-haired guy sits on the couch while the fat guy stands and discusses with the agent. They finally get up and leave.

BUY 11 - Both return with tape players to sell. A woman enters and looks around; the dealing has to wait. They all sit down, but the long-haired guy does not sit back and appears nervous. The woman leaves and dealing commences. The fat one seems relaxed; the agent leaves a moment and the two subjects exchange quick comments. The agent comes back and pays them.

The agent leaves for a few moments and Kirk is left standing there, looking around. The agent returns and they talk; this buy takes a long time. Kirk never sits down. The agent gives his "home" number to Kirk and he leaves.

They sit in this position and talk for awhile quietly. They get up all at once and leave.

BUY 12 - Wade (the fat one) comes in by himself. A woman walks around looking at things she would like to buy; she makes an ass of herself. The agent and Wade stand near the camera as far away from the woman as possible. Quietly they make a deal and Wade slips out.

TAPE 10 498

BUY 26 - Wade brings in some pot and sits in front of the desk. While they deal he sits forward for awhile, and when they settle on a price he leans back. He comes forward to get the money. Two agents deal with him. After making the deal he smokes a cigarette and remains sitting forward. He turns around and looks behind him, I don't know what he was looking at.

BUY 28 - Wade and some friends (Steve West and Charles) bring in two washers, cassette recorder, etc. They have backed their car in and one of the friends walks around looking the place over. Wade and Steve stay with the goods and help the agent examine what they've brought. Wade and the skinny long-haired guy test all the equipment. The new guy seems nervous and paces around during all this; he wears mirrored dark glasses. The tape ends after the deal is made; no one sat down.

BUY 27 - Kirk stands in front of the desk. He walks back over to his car which is backed in, and returns to the desk. He puts the two TVs he's selling on the couch and they see if they work. Kirk looks a little around the room but never sits down. A deal is made, he goes to his car and departs.

AUGUSTA

Robert and Kirk

TAPE 9

BUY 19 - Robert and Kirk, two black males, eventually end up standing in front of the desk and do not sit down. I'm not sure if this is their first visit, but it appears that it is not because they seem too accustomed to the surroundings.

BUY 20 - Kirk brings in an organ which he positions in front of the desk, standing off to the left of the camera. The agent sits on the front of the desk and Kirk positions himself thus:

BUY 12 - Charles and his new friends are back with a TV. They look around the room while the agent photographs the TV. They stand poised while the agent decides what to offer them.

The agent leaves for a few moments and Kirk is left standing there, looking around. The agent returns and they talk; this buy takes a long time. Kirk never sits down. The agent gives his "home" number to Kirk and he leaves.

BUY 21 - They bring in a color TV, positions as shown. All attention is directed towards the goods and the agent. They make a deal.

BUY 15 - Charles and his friend are back as in Buy 14. They come in with a large TV, positioning themselves as they did before:

One of them looks around a little, and all of them direct their attention to the TV. They sit down and the agent gets up. They all appear relaxed. A deal is made and they leave.

BUY 22 - The agents are talking with Charles and his friend and there are some very uneasy words. The subjects stand in the middle of the room and one of them stands in front of the camera a great deal. Charles argues with the agents while his friend stands off to the side and listens. This is a tense conversation.

BUY 22, TAPE 10 - Assuming the same positions as above, they all seem more relaxed. One of them thumbs through a magazine. They haggle a little over the price, make a deal and receive money. They sit forward in their seats and talk for a few more seconds before leaving.

BUY 27 - Kirk stands in front of the desk. He walks back over to his car which he's backed in, and returns to the desk. He puts the two TVs he's selling on the couch and they see if they work. Kirk looks a little around the room but never sits down. A deal is made, he goes to his car and departs.

TAPE 12

BUY 4 - Charles comes in and looks the place over. His friend (?) brings the merchandise in. The agent says to Charles "Come on in and relax man, just be cool." They seem nervous and very aloof. The agents try to explain their position and Charles is off camera most of the time. For a long while they haggle over price but finally strike a deal.

BUY 11 - Charles and two other friends bring in a stereo. One of them looks around the room while Charles gets right to work in showing the things. They all hover around the equipment and haggle with the agent - Charles is outraged at the agent's offer. They are not satisfied with the deal and take the equipment with them.

BUY 12 - Charles and two new friends are back with a TV. They look around the room while the agent photographs the TV. They stand poised while the agent decides what to offer them.

BUY 13 - Charles is back with a friend. They stand to the left and the agents to the right. They do not appear nervous and a deal is made fairly quickly.

BUY 14 - Charles visits with a friend. They stand in front of the couch and Charles' friend plays with himself! They are comfortable with the place now and all attention is directed towards the goods and the agent. They make a deal.

BUY 15 - Charles and his friend are back as in Buy 14. They come in with a large TV, positioning themselves as they did before:

BUY 22 - The agents are unhappy with Charles and his friend and there are some very uneasy words. The subjects stand in the middle of the room and one of them stands in front of the camera a great deal. Charles argues with the agents while his friend stands off to the side and listens. This is a tense conversation.

BUY 39 - Charles friend comes in with the goods without Charles. His friend is in the middle of the room dealing with the agent. They make a quick deal and are more relaxed. Evidently Charles stayed in the car.

APPENDIX C

Length of Buy

Length of time before Mds. emerges	HHHHHHH
Time spent analysing Mds.	EEEEEEE
Time when money is brought into question	EEEEEEE
Money changes hands	TTTTTTT
Time untill seller leaves	TTTTTTT

On/Off Camera

On Camera	XXXXXXX
Off Camera	

Voice Volume

High	.....
Medium	÷÷÷÷÷÷
Low	.....

Body Positions

Standing	ΔΔΔΔΔΔ
Sitting	▽▽▽▽▽▽
Leaning	↑↑↑↑↑↑

Body Movement

High	.....
Medium	÷÷÷÷÷÷
Low	.....

Hand Movement

At Rest	~~~~~
Pointing	→→→→→
Explaining	oooooooo
Clasped	←←←←←
Holding	≈≈≈≈≈

Smoking

Smoking	XXXXXXX
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BUY 4/ CHARLES AND FREINDS (Charles)

Length of Buy

ΠΠΠΠΠΠΠΠ ΕΕΕΕΕΕΕΕ ΕΕΕΕΕΕΕΕ ΕΕΕΕΕΕΕΕ ΕΕΕΕΕΕΕΕ ΕΕΕΕΕΕΕΕ ΕΕΕΕΕΕΕΕ ΕΕΕΕΕΕΕΕ ΕΕΕΕΕΕΕΕ ΕΕΕΕΕΕΕΕ ΓΓ ΓΓ

On/Off Camera

xx x xxxxxxx xx

Voice Volume

÷÷÷÷÷÷ ÷÷÷÷÷÷ ÷÷÷÷÷÷ ÷÷÷÷÷÷ ÷÷÷÷÷÷ ÷÷÷÷÷÷ ÷÷÷÷÷÷ ÷÷÷÷÷÷ ÷÷÷÷÷÷ ÷÷

Body Positions

ΔΔ Δ ΔΔΔΔΔΔ ΔΔ

Body Movement

... ..

Hand Movement

~ ~ ~ ~ ~ ~ ~ ~

Location

G4 J4 G4

1 2 3 4 5 6 7 8 9

Length of Buy

TTTTTTTTT EEEEE= =====

On/Off Camera

xx

xx

Voice Volume

.....

Body Positions

ΔΔ

ΔΔ

Body Movement

....

....

Hand Movement

≈≈

≈≈

Location

I2 I4 I2

I4 I2

1 2 3 4 5 6 7 8 9

Length of Buy EEEEE EEEEE EEEEE EEEEE EEEEE EEE

On/Off Camera x x x xxxxx x xxx

Voice Volume

Body Positions Δ Δ Δ ΔΔΔΔ Δ ΔΔΔ

Body Movement

Hand Movement ≈ ∞ ∞ ∞∞∞∞ ≈ ≈≈≈

Location H3^{J3} H3 J3 H3 J3 H3

1 2 3 4 5

Length of Buy EEEEE EEEEE EEEEE EEEEE EEEEE EEE

On/Off Camera x x x xx xx

Voice Volume Says nothing

Body Positions Δ Δ Δ ΔΔ ΔΔ

Body Movement • • • ÷÷ ÷÷

Hand Movement ≈ ≈ ∞ oooo oooo

Location Moving continously

1 2 3 4 5

Length of Buy

=====

On/Off Camera

x xxxx xxxxxxx xxxxxxx xxx

Voice Volume

Can't tell

Body Positions

Δ ΔΔΔΔ ΔΔΔΔΔΔ ΔΔΔΔΔΔ ΔΔΔ

Body Movement

• ••÷÷ ÷÷÷÷÷÷ ÷÷÷÷÷÷ ÷÷÷

Hand Movement

≈ ≈≈~ ~~~~~~ ~~~~~~ ~~~~~

Location

H4^{J4} H4 J4 H4

1 2 3 4 5

Length of Buy	=====	=====	=====	=====	Γ
On/Off Camera	xxxx	xxx	x	xxx	x
Voice Volume	+++++	+++++	+++++	+++++	+
Body Positions	ΔΔΔΔ	ΔΔΔ	Δ	ΔΔΔ	Δ
Body Movement	....	...	.	...	.
Hand Movement	~~~~	~~~~	~	~~~~	~
Location	H3	I4 ^{H3}	I4	H3	
	1	2	3	4	

Length of Buy EEEEE EEEEE EEEEE EEEEE I

On/Off Camera xx xx xxx xxxxxx x

Voice Volume EEEEE EEEEE EEEEE EEEEE

Body Positions ΔΔ ΔΔ ΔΔΔ ΔΔΔΔΔΔ Δ

Body Movement

Hand Movement ≈≈ →→ ~~~ ~~~~~ ~

Location G5 J3 G5 J3 G5

1 2 3 4

Length of Buy EEEEE EEEEE E===== E===== ¶¶

On/Off Camera x x'xxxx xxxxxx xx

Voice Volume +++++ +++++ +++++ +++++ ++

Body Positions Δ Δ ΔΔΔΔ ΔΔΔΔΔΔ ΔΔ

Body Movement ÷ ÷ +++++ ++++++ ++

Hand Movement ~ ~ ~~~~~ ~~~~~ ~

Location H4 I4 H4^{I4} H4

1 2 3 4

Length of Buy

EEEEEE EEEEE E===== IT TTT

On/Off Camera

xx x xxxx xxx

Voice Volume

.....

Body Positions

ΔΔ Δ ΔΔΔΔ ΔΔΔ

Body Movement

..

Hand Movement

≈≈ ∞ ∞∞∞∞ ←←←

Location

G5^{J4} G5 J4 G5

1 2 3 4

Length of Buy

===== E===== E===== ITT

On/Off Camera

xx xxxxxx xxxxxx xxx

Voice Volume

.....

Body Positions

ΔΔ ΔΔΔΔΔ ΔΔΔΔΔ ΔΔΔ

Body Movement

....

Hand Movement

~ ~~~~~ ~~~~~≈ ~

Location

I4 G4

1 2 3 4

Length of Buy EEEEE EEE== EEEEE EEE=IT

On/Off Camera xxx xxxxx xxxxx

Voice Volume +++ +++++ +++++ +++++

Body Positions AAA AAAAA AAAAA

Body Movement

Hand Movement ~~~ ~~~~ ~~~~

Location E4 F4 E4

1 2 3

Length of Buy ||EEEE EEEEE EEEEE|| FT

On/Off Camera xxx xxxx xxx xx

Voice Volume ++++++ ++++++ ++++++ ++

Body Positions ΔΔΔ ΔΔΔΔ ΔΔΔ ΔΔ

Body Movement +++ ++++ +++ ++

Hand Movement ≈≈≈ ~~~~~ ~~~ ~

Location H5 I4 H5 I4 H5

1 2 3

Length of Buy IIIIIIIII EEEEEEE EEEEEII IT

On/Off Camera XXX XXXXXX XXXXX XX

Voice Volume ++++++ ++++++ ++++++ ++

Body Positions ΔΔΔ Δ↑Δ↑Δ↑ ↑↑ΔΔΔΔ ΔΔ

Body Movement

Hand Movement ≈≈≈ ≈~~~~~~ ~~~~~~ ≈

Location H5 I3 H5

1 2 3

[illegible]

XX XXXXXX XXXXX

XXXXXXXXXXXX XXXX XXXX

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$\Delta\Delta$ $\Delta\Delta\Delta\Delta\Delta\Delta$ $\Delta\Delta\Delta\Delta\Delta$

[illegible]

$\approx \approx$ $\sim \sim \sim \sim$ \leftrightarrow $\sim \sim \sim \sim$ $\sim \sim \sim \sim$ $\approx \approx \approx$ $\sim \sim \sim \sim$

$$\text{H4} \text{ } ^{\text{I4}} \text{H4} \qquad \text{I4} \qquad \qquad \qquad \text{H4} \qquad \text{I4} \qquad \text{H4}$$

1	2	3	4	5	6	7	8	9	10
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Length of Buy

IIIIIII EEEEE EE===== E===== E===== E===== E===== E===== E===== E===== E===== E===== IIII TT TT

On/Off Camera

xxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxx

Voice Volume

Body Positions

AAA AAAAAA AAAAAA AAAAAA AAAAAA AAAAAA AAAAAA AAAAAA AAAAAA AAAAAA AAA

Body Movement

...

Hand Movement

~~~

Location

H3 I3        H3

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1        2        3        4        5        6        7        8        9        10        11

Length of Buy      IIIIIIII IIIIIIII IIII

On/Off Camera      xxx    xxxxxx    xxx

Voice Volume      ++++++ ++++++ +++

Body Positions      ΔΔΔ    ΔΔΔΔΔ    ΔΔΔ

Body Movement      ...    .....    ...

Hand Movement      ≈≈∞    ∞~~~~∞    ~≈

Location      F4 E4<sup>F4</sup>

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1      2



Length of Buy EEEEEEE EEEEEIT

On/Off Camera xxxxxx xxxxxx

Voice Volume .....

Body Positions Δ↑ΔΔΔΔ ΔΔΔΔ↑Δ

Body Movement ÷÷÷÷÷÷ ÷÷÷÷÷÷

Hand Movement oo~oo~v~ ~~~~~

Location Stands infront of desk, with agent behind.

1 2



Length of Buy

EEEEEE EEEIT

On/Off Camera

XX XX XX

Voice Volume

.....

Body Positions

AA AA AA

Body Movement

..

Hand Movement

~

Location

Stands in the middle of the room.

1

2

[illegible]

XXXX XX XXXXXX XXXXXXX XXXXXXX XXXXXXX XXXXXXX XXXXXXX XXXXXXX XXXXXXX

[illegible]

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~~~~~ Can't see hands ~~~~ ↵↵↵↵↵ ∞∞∞∞∞~~~~~      ~~~≈≈≈~~~~ ~~~~~≈

Stands in the middle of the room

1 2 3 4 5 6 7 8 9

Length of Buy

EEEEE EEEEE EEEEE EEEEE EEEEE EEEEE EEEEE EEEEE
 EEEEE EEEEE EEEEE EEEEE EEEEE EEEEE EEEEE EEEEE

On/Off Camera

xxx xx xxx xx xxxx xxxxxx xxxxxx xxx xxxxxx
 xxx xxxxxx xxx xxxxxx xxx xxxxxx

Voice Volume

Can't tell.

Body Positions

AAA VV VVV VV VVVV VVVVVV VVVVVV VVV VVVVVV
 VVVVVV VVVVVV VVVVVV VVVVVV VVVVVV VVVVVV

Body Movement

÷÷÷

Hand Movement

~~~< << <<< ~ ~~~~~    ~~~~~~ ~~~~~~    <<< <<<~~~~  
 ~~~~~~ ~~~~~~    ~~~~~~ ~~~~~~    ~~~~~~ ~~~~~~

Location

Sitting in front of desk, with agent behind.

1 2 3 4 5 6 7

Length of Buy

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On/Off Camera

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x  xxx  xxx  x  xxxxxx  xxxxxx  xxxxxx  xxxxxx  xxxxxx  x

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Voice Volume

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.....

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Body Positions

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V  VVV  VVV  V  VVVVVV  VVVVVV  VVVVVV  VVVVVV  VVVVVV  V

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Body Movement

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..  ....  ....  ..  ....  ....  ....  ....  ....  ..

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Hand Movement

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Location

Sits on the sofa to the side of the desk.

1

2

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7

Length of Buy

EEEEEE EEEEE EEEEE EEEEE EEEEE EEEEE EEEEE EEEEE

On/Off Camera

XXXX X X XXX XXXXXX XXXXXX XXXXXX XXXXXX X XXX

Voice Volume

+++ ÷ ÷ +++ +++++ +++++ +++++ +++++ +++++ ÷ +++

Body Positions

ΔΔΔΔ Δ Δ ∇∇Δ ΔΔ∇∇∇ ∇∇∇∇∇ ∇∇∇∇∇ ∇∇∇∇∇ ∇ ΔΔΔ

Body Movement

....+++ +++++ +++++ +++++ +++++ ÷ +++

Hand Movement

←∞∞≈ ≈ ≈ ≈∞∞ ≈←←←≈ ≈≈≈≈≈≈ ≈≈≈≈← ←←≈←≈ ≈ ≈≈≈

Location

Sitting infront of desk with agent behind.

1 2 3 4 5 6 7 8

| | |
|----------------|---|
| Length of Buy | EEEEEE EEEEE EEEEE EEEEE EEEEE EEEEE EEEEE EEEEE Γ ΓΓ |
| On/Off Camera | xx xxx xxxxxx xxxxxx xxxxxx xxxxxx xx xx xxx |
| Voice Volume | Can't tell |
| Body Positions | ∇∇ ΔΔ∇ ∇∇∇∇∇ ∇∇∇∇∇ ∇∇∇∇∇ ∇∇∇∇∇ ∇∇ ∇∇ ∇∇∇ |
| Body Movement | ... .... ..... |
| Hand Movement | ←← ≈~ ~~~~~ ~~~~~ ~~~~~ ~~~~~ ~~~~~ ~~~~~ ≈≈ ≈≈≈ |
| Location | Sits on the sofa next to the desk. |

1 2 3 4 5 6 7 8

Length of Buy

EEEEEE EEEEE EEEEE EEEEE EEEEE EEEEE EEEEE EEEEE

On/Off Camera

xxxxx xxxx x xxxxxx xxxxxx xxxxxx xxx xxxxxx xx

Voice Volume

÷÷÷÷÷ ÷÷÷÷÷ ÷÷÷÷÷ ÷÷÷÷÷ ÷÷÷÷÷ ... ÷÷÷÷÷ ÷÷

Body Positions

↑△↑△△ △△△↑ △ ↑↑↑△▽▽ △△△△△ △△△△△ △△△ △△△△△ △△

Body Movement

.....

Hand Movement

∞≈≈≈ ≈≈≈≈ ≈ ∞≈≈≈≈ ∞≈≈≈≈ ∞≈≈≈≈ ∞≈≈≈≈ ∞≈≈≈≈ ∞≈≈≈≈

Location

Moves around the space continuously

1 2 3 4 5 6 7

1 2 3 4 5 6 7 8 9 10 11 12 13 14

On/Off Camera

×

XXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX X

Can't tell.

 Δ

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12

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Sits on chair to thr side of the desk.

XXXXXXXX XXXXXXXX X

1 2 3 4 5 6 7 8 9

Smoking

XX XXXXXX XXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX X

1 2 3 4 5 6 7 8 9

| | |
|----------------|------------------------------------|
| Length of Buy | EEEE=IT |
| On/Off Camera | XXXXXX |
| Voice Volume | Can't tell. |
| Body Positions | ΔΔΔΔΔ |
| Body Movement | ..... |
| Hand Movement | ≈≈≈≈ |
| Location | Stands infront of desk with agent. |
| Smoking | XXXXXX |

| | |
|----------------|--|
| Length of Buy | EEEEEE EEEEE EEEE TTT TTTTTT TTTTTT T |
| On/Off Camera | xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx x |
| Voice Volume | Can't tell |
| Body Positions | VVVVVV VVVVVV VVVVVV VVVVVV VVVVVV Δ |
| Body Movement | ..... .. |
| Hand Movement | ≈≈≈≈≈≈ ≈←←←←←← ←↘≈≈≈≈ ≈≈≈≈≈≈ ≈≈≈≈≈≈ ≈ |
| Location | Sits in chair in front of desk with agent behind. |
| Smoking | <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">1</div> <div style="text-align: center;">2</div> <div style="text-align: center;">3</div> <div style="text-align: center;">4</div> <div style="text-align: center;">5</div> </div> <div style="text-align: center; margin-top: 10px;">xxx xxxxxx x</div> |

Location

Stands in the corner of the room.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
|---|---|---|---|---|---|---|

Length of Buy

EEEEEE EEEEE EEEEE EEEEE EEEEE EEEEE EEEEE EEEEE EEEEE

On/Off Camera

XXXXX XXX XXX XX XXXXXX XXXXXX XXX XXXXXX XXXXXX

Voice Volume

Can't tell

Body Positions

AAAAA AAA AAA AA AAAAAA AAAAAA AAA AAAAAA AAAAAA

Body Movement

.....

Hand Movement

~~~~~ ~~~~ ~~~~ ~~~~ ~~~~~~ ~~~~~~ ~~~~~~ ~~~~~~ ~~~~~~

Location

In the middle of the room.

Smoking

\* 1 2 3 4 5 6 7 8



Length of Buy EEEEE EEEEE EEEEE EEEEE EEEEE EEEEE EEEEE TTTT

On/Off Camera x x xx xx x xxx

Voice Volume Can't tell.

Body Positions Δ Δ ΔΔ ΔΔ Δ ΔΔΔ

Body Movement ÷ ÷ ÷÷ ÷÷ ÷ ÷÷÷

Hand Movement ≈ ≈ ≈≈ ≈≈ ≈ wavy

Location Wanders around the room. The desk with agent behind desk.

Smoking x x xx

1 2 3 4 5 6 7



Length of Buy

[illegible]

On/Off Camera

XXXXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXX

Voice Volume

.....

## Body Positions

▽▽▽▽▽▽ ▽▽▽▽▽▽ ▽▽▽▽▽▽ ▽▽▽▽▽▽ ▽▽▽▽▽▽ ▽▽▽▽▽▽ ▽▽▽▽▽▽ ▴▴▴▴▴ ▽↑↑▴▴▴ ▴▴▴▴▴▴ ▴▴▴▴▴▴ ▴▴▴

### Body Movement

\*\*\*\*\*

### Hand Movement

[illegible]

Location

Sitting on the edge of the desk with agent behind desk.



|                |                                               |
|----------------|-----------------------------------------------|
| Length of Buy  | =====                                         |
| On/Off Camera  | xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxx |
| Voice Volume   | ++++++ ++++++ ++++++ ++++++ ++++++ ++++++ +++ |
| Body Positions | ΔΔΔΔΔΔ ΔΔΔΔΔΔ ΔΔ↑↑▽▽ ▽▽▽▽▽▽ ▽▽▽▽▽▽ ▽▽▽▽▽▽ ΔΔΔ |
| Body Movement  | .....                                         |
| Hand Movement  | ~~~~~ w~~~~ w~~~~ w~~~~ w~~~~ w~~~~ ~~~       |
| Location       | Standing infront of desk, wi-h agent behind.  |

1      2      3      4      5      6



|   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|





XXXXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX

Can't tell

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$\approx \approx \approx \approx \approx$ 




 $\approx$ 






Stands in the middle of the room.

|   |   |   |   |   |   |   |   |   |    |    |
|---|---|---|---|---|---|---|---|---|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
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[illegible]

XXXXXXXX XXXXXXXX XXXXXXXX XXXX

XXXXXXXX XXX

Say nothing

△△△△△△ △△△△△△ △△△△△△ △△△

△△△△△△ △△△

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Stands in truck bed for the whole Buy.

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11

Length of Buy

===== 11TT

On/Off Camera

x x xxx xxx xxx

Voice Volume

.....

Body Positions

Δ ∇ ∇∇∇ ∇∇∇ ΔΔΔ

Body Movement

÷ ÷ ÷÷÷ ÷÷÷ ÷÷÷

Hand Movement

≈ ≈ ≈≈≈ ←≈≈ ≈≈≈

Location

G5 F5

1 2 3

Length of Buy

EEEEEE EEEEE EEE== 11111

On/Off Camera

xxxxx x xxx xxxxxx xxxx

Voice Volume

+++++ +++++ +++++ +++++

Body Positions

AAAAA VVV AAAAAA AAAA

Body Movement

+++++ +++ +++++ +++++

Hand Movement

oooooooo ooooo <<<<<< ~~~~~

Location

D4^{E4} F3 E4

1

2

3

Length of Buy

EEEEEE EEEEE EEEEE EEEEE EEEEE EEEEE EEEEE

On/Off Camera

xxx x xxx xxx x xxxxxx

Voice Volume

+++++ +++++ +++++ +++++ +++++

Body Positions

AAA A VAA VVV A AAAAAA

Body Movement

+++ + + ++++++

Hand Movement

zzz + zzz zzz zz zzzzzz

Location

D6 G4 G4 B5

Smoking

xxxxxx xxxxxx xxxxxx x

1 2 3 4 5 6

Length of Buy EEEEE EEEEE E===== ===== ===== ETTTT

On/Off Camera XX XXXXXX XXXXXX XXXXXX XXXXXX

Voice Volume ÷÷ ÷••÷÷÷ ÷÷÷÷÷÷ ÷÷÷÷÷÷ ÷÷÷÷÷÷

Body Positions ΔΔ ΔΔΔΔΔΔ ΔΔΔΔΔΔ ΔΔΔΔΔΔ ΔΔΔΔΔΔ

Body Movement ÷÷ ÷÷÷÷÷÷ ÷÷÷÷÷÷ ÷÷÷÷÷÷ ÷÷÷÷÷÷

Hand Movement ≈≈ ≈≈≈≈≈≈ ≈≈≈≈≈≈≈ ≈≈≈≈≈≈ ≈≈≈≈≈≈

Location E4 F3

Smoking XX XXXXXX XXXXXX XXXXXX

1 2 3 4 5 6

Length of Buy

IIIIIIII EEEEEEE E===== ITT

On/Off Camera

xxxxxxx xxxxxxx xxxxxxx xxx

Voice Volume

.....

Body Positions

VVVVVVV VVVVVVV VVVVVVV VVV

Body Movement

.....

Hand Movement

~~~~~ ~~~~~ ~~~~~ ~~~

Location

B5

1 2 3



|                |                                                  |
|----------------|--------------------------------------------------|
| Length of Buy | \|\|\|\|\| \|\|\|\|\| \|\|\|\|\| \|\|\|\|\| \|\|\|\|\| \|\|\|\|\| \|\|\|\|\| |
| On/Off Camera  | xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx |
| Voice Volume   | +++++ +++++ +++++ +++++ +++++ +++++ +++++        |
| Body Positions | vvvvvv vvvvvv vvvvvv vvvvvv vvvvvv vvvvvv vvvvvv |
| Body Movement  | ..... .....                                      |
| Hand Movement  | oooooooo ooooooooo ~~~~~ ~~~~~ ~~~~~ ~~~~~ ~~~~~ |
| Location       | B5                                               |

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IIIIIII 999999

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| 100 | 1 |

Length of Buy

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On/Off Camera

xxxx x xxxxxxx x x xxxxxxx xxx

Voice Volume

.....

Body Positions

VVVAAA AAAAAA AAAAAA AAAAAA AAA

Body Movement

.....

Hand Movement

oo~ ~ ~oo~oo~oo oo oo oo~oo~oo~ ~~

Location

B6 D5

Smoking

x xxxxxxx xxx

1 2 3 4







Length of Buy

MINUTE EEEEE EEEEE EEEEE EEEEE EEEEE EEEEE EEEEE EEEEE EEEEE EEEEE

On/Off Camera

xx x xx

Voice Volume

..... ++++++ ++++++ .....

Body Positions

AAAAAAAA AAAAAAAAA AAAAAAAAA AAAAAAAAA AAAAAAAAA AAAAAAAAA AAAAAAAAA AAAAAAAAA AAA

Body Movement

.... .. ÷÷

Hand Movement

~ ~ 0000

Location

F8 E6 F8 E6 F8 E6 F8

1 2 3 4 5 6 7 8

BUY 5/ BOB (woman who is with BOB).

Length of Buy

NNNNNN NNNNNN NNNNNN NNNNNN NNNNNN NNNNNN NNNNNN NNNNNN NNNNNN NNNNNN

On/Off Camera

x x x x leaves room for remainder of buy.

Voice Volume

.....

Body Positions

Δ Δ Δ Δ

Body Movement

. . . .

Hand Movement

≈ ≈ ≈ ≈

Location

Always moving

Smoking

1

toothpick

1

2

3

4

5

6

7

8

9

Length of Buy

[illegible]

On/Off Camera

X            XX X'    X       XXXXX    XX    X            XX                    XX                    XX

Voice Volume

.....

## Body Positions

↑                    △△ △                    △                    △△△△△ △△                    △                    △△                                       △△                    △△

### Body Movement

\*\*                      \*\*\*\*   \*\*                      \*\*\*\*\*   \*\*\*\*                      \*\*                      \*\*\*\*                       $\frac{+}{-} \frac{+}{-}$                       • •

## Hand Movement

[illegible]

Location

F7 E5 F7    E5 E5 F7    E5   F7 E5   E5 F7 E5 F7    E5 F7

Smoking

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XXXXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XX
toothpick

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1            2            3            4            5            6            7            8            9



|               |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |   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|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------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| Length of Buy | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | NNNNNN | 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Length of Buy

===== 1111111 111

On/Off Camera

xxxxxx xxxxxx xxx

Voice Volume

.....

Body Positions

↑△△△↑ ↑↑↑↑△ △△△

Body Movement

..... ÷÷÷

Hand Movement

~~~~~ ~~~~~ ~~~

Location

E5

Smoking

xxxxxx xxxxxx xxx
toothpick

21

22

Length of Buy EEEEEEE EEEEEEE EEEEEEE EEEEEEE EEEEEEE E

On/Off Camera XXXXXX XXXXXX XX X XXX XX X

Voice Volume

Body Positions ΔΔΔΔΔΔ ΔΔΔΔΔΔ ΔΔ Δ ΔΔΔ ↑↑ Δ

Body Movement

Hand Movement ≈~~~~~ ~~~~~~ ~~~ ∞ ~~~~~ ≈≈ ≈

Location F5 F7 G7 F5 G7 F7^{F5}

Smoking XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX X

1 2 3 4 5

Length of Buy EEEEE EEE== TTFFFF TTTTTT

On/Off Camera xxxxxx xxxxxx xxxxxx xxxxxx

Voice Volume +++++ +++++ +++++ +++++

Body Positions VVVVVV VVVVVV VVVVVV VVVAAA

Body Movement +++++

Hand Movement ~~~~~ ~~~~~ ~~~~~ ~~~~~

Location A5

Smoking xxxxxx xxxxxx xxxxxx xxxxxx

1 2 3 4

Length of Buy ΠΕΕΕΕΕ ΕΠΤ

On/Off Camera xxx x

Voice Volume

Body Positions ΔΔΔ ΔΔ

Body Movement

Hand Movement ~~~ ~~~

Location E5 F6

Smoking xxxxxxx xxx

16

Length of Buy

===== ¶¶¶¶¶¶ ¶¶¶¶¶¶ ¶¶¶¶¶¶ ¶¶¶¶¶¶ ¶¶¶¶¶¶ ¶¶¶¶¶¶

On/Off Camera

xxxxxx xxxxxxx xxxxxxx xxxxxxx xxx x xxxxxxx xxxxx

Voice Volume

÷÷÷÷÷÷

Body Positions

ΔΔΔΔΔΔ ΔΔΔ▽▽▽ ▽▽▽▽▽ ▽▽▽▽▽ ▽▽ΔΔΔΔ ▽▽▽▽▽ Δ▽▽ΔΔ

Body Movement

÷÷÷÷÷÷ ..".÷"

Hand Movement

ooooooooo ~~~~~<-> ~~~~~ ~~~~~<-> ->->cant see hands

Location

Buy F6 B5 A5 B5 F6 E4 F6 E4

Smoking

1 2 3 4 5 6

BUY 6/ TONY (man who comes in with TONY).

Length of Buy ===== UTTTTT TTTTTT TTTTTT TTTTTT TTTTTT TTTTTT

On/Off Camera x x x x x x xxx x x x

Voice Volume
.....

Body Positions Δ Δ Δ Δ Δ Δ ∇∇∇ ∇ Δ Δ

Body Movement

Hand Movement Always moving

Location Always moving

Smoking xxxxxx xxxxxx xxxxxx

1 2 3 4 5 6

Length of Buy

EEEEEE EEEEE EEEEE

On/Off Camera

x xxxx xxxxxx xxxxxx

Voice Volume

+++++ +++++

Body Positions

Δ VVVV ΔΔΔΔΔ ΔΔΔΔΔ

Body Movement

÷ +++++

Hand Movement

∞ ~~~~~ ~~~~~ ~~~~~

Location

E5 F4 D5 E5 F5

1 2 3

On/Off Camera

Voice Volume

Body Positions

Body Movement

Hand Movement

Location

XXXXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX

▽▽▽▽▽▽ ▽▽▽▽▽▽ ▽▽▽▽▽▽ ▽▽▽▽▽▽ ▽▽▽▽▽▽ ▽▽▽▽▽▽ ▽▽▽▽△△

.....

[illegible]

B4

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
|---|---|---|---|---|---|---|

[illegible][illegible]

..... $\frac{1}{2} \cdot \frac{1}{2}$ $\frac{1}{2} \cdot \frac{1}{2}$

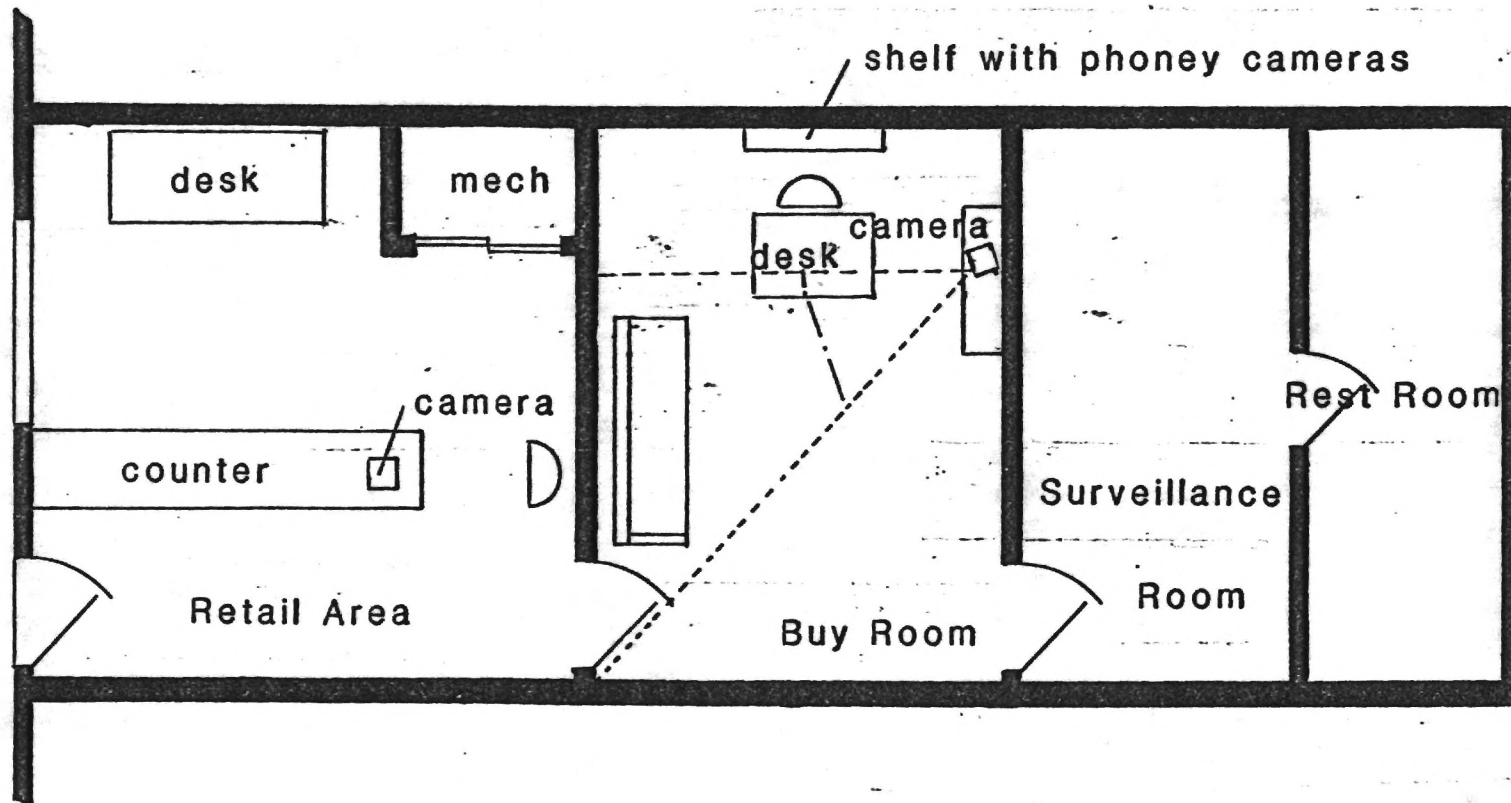
▽▽▽▽▽ ▽▽▽▽▽ ▽▽▽▽▽ ▽▽▽▽▽ ▽▽▽▽▽ ▽▽▽▽▽ ▽▽▽▽▽ ▽▽▽▽▽ ▽▽▽△△ ▽▽▽▽▽ ▽▽▽▽▽ ▽▽▽▽▽ ▽▽▽▽▽ ▽▽▽▽▽ ▽▽▽▽▽ ▽▽▽▽▽ ▽▽▽▽▽ ▽▽▽▽▽ ▽▽▽▽▽ ▽▽▽▽▽

[illegible]

A long horizontal bar composed of various symbols including wavy lines, vertical bars, and numbers.

| B8 | E8 B8 | | | | | | | | | | | | | | | | | |
|----|-------|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |

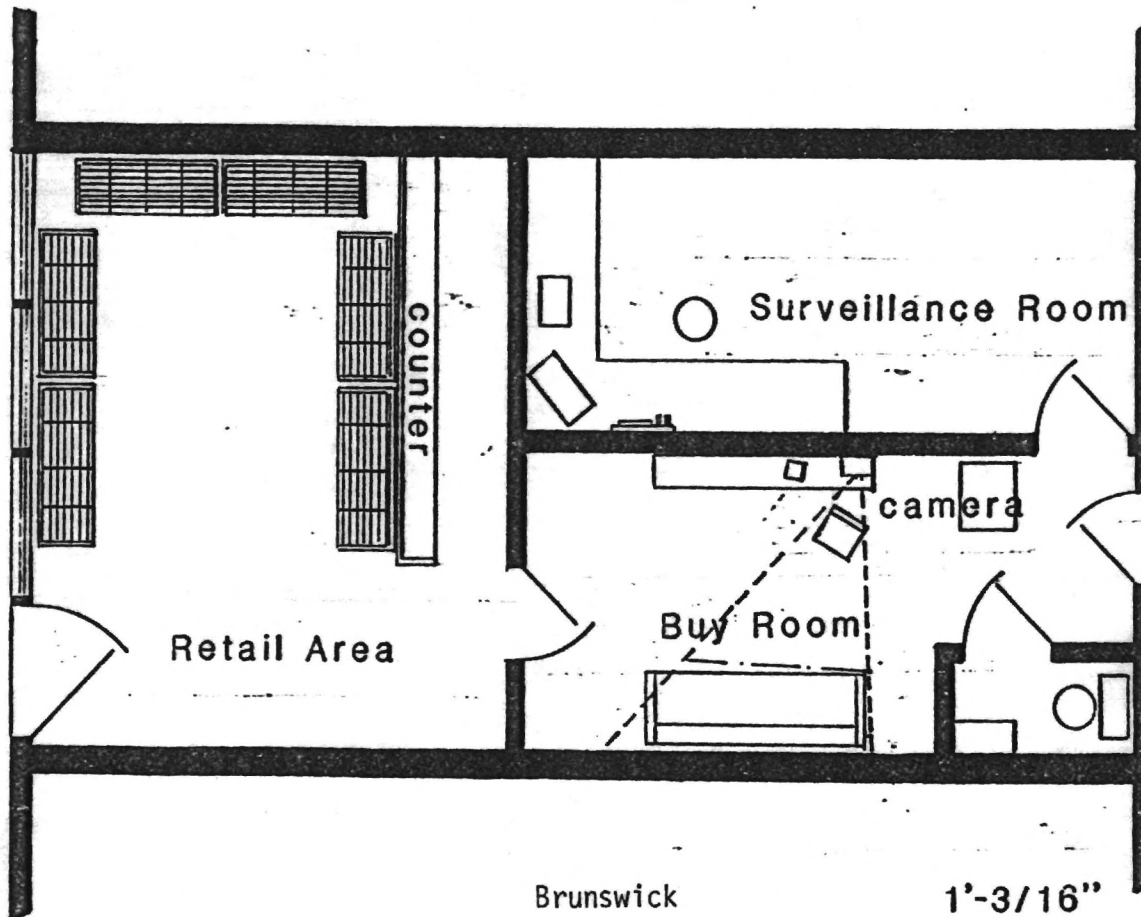
APPENDIX D



ATLANTA

1'-3/16"

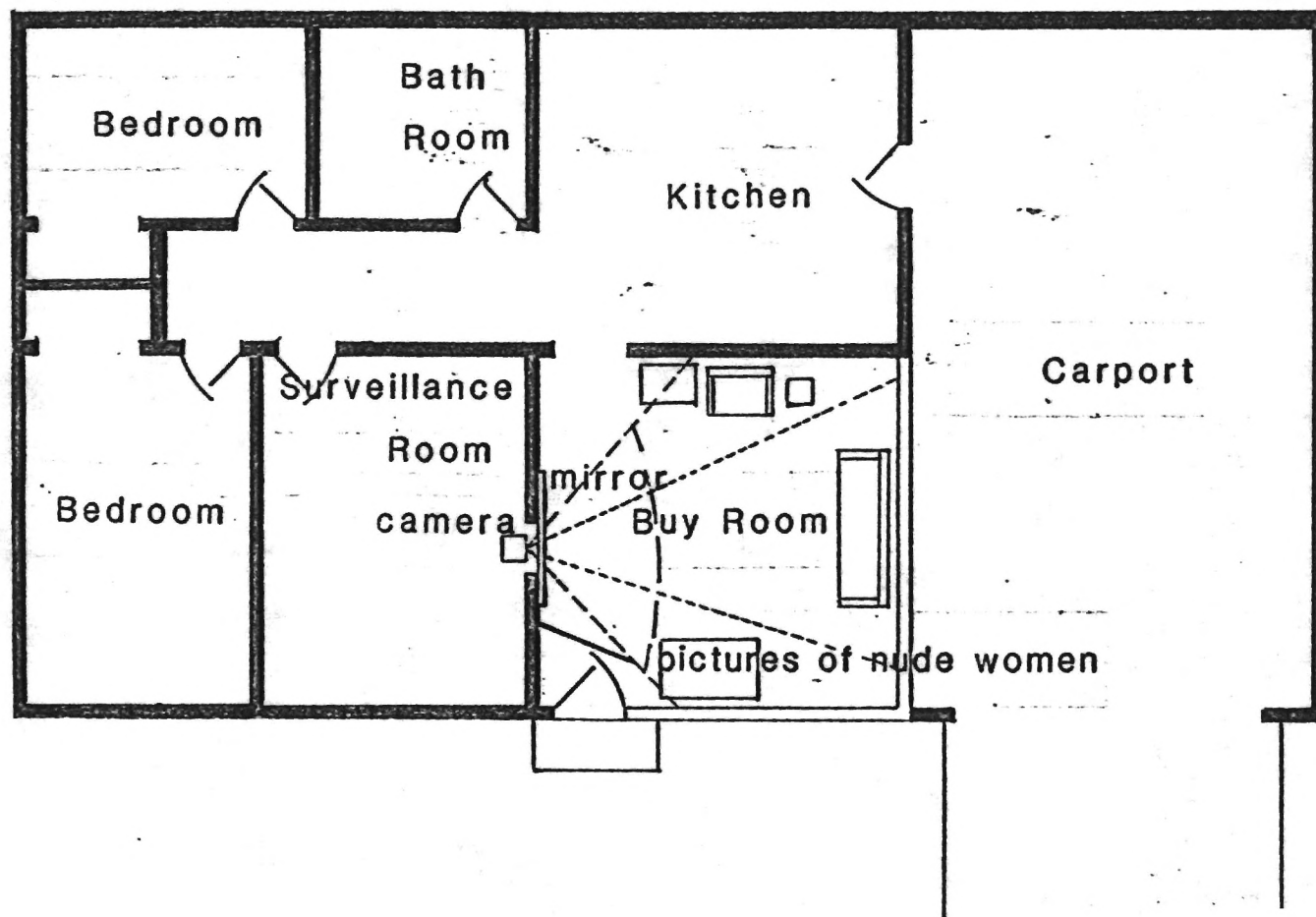
Parking



Alley

Brunswick

1'-3/16"



**Behaviorial Research Applications of
Videotapes Made During "Sting" Transactions**

Final Draft

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Introduction

During the past several years film and videotape have been used extensively to record various kinds of criminal transactions in progress. These have ranged from surveillance systems in banks and retail establishments to more detailed recordings of highly specialized police actions such as undercover "sting" operations. To date, these kinds of visual (and audio) records have been used primarily as an aid in identifying persons suspected of criminal activity. However, given that many of these films and tapes contain a rich, unobtrusive record of the circumstances surrounding the criminal events in question, they may also provide valuable data on aspects of criminal behavior in addition to the identification and documentation needed to prosecute offenders. At present the utility of such videotape records for research on criminal behavior remains an open question.

In 1979 exploratory research was initiated in the College of Architecture at Georgia Tech which sought to use videotape and film records from security cameras to reconstruct the sequences of behavior exhibited by the perpetrators and victims of bank robberies. The goal of this research was to identify the architectural or spatial parameters of behavior during bank robberies. If such parameters could be identified, then guidelines could be developed for more effectively incorporating the spatial layouts of branch banks into their overall security systems. Although no actual film or videotape footage was analyzed, preliminary work indicated that such research would be feasible and could yield important new information on the conduct of bank robberies (Dickey, 1980; Archea, 1980).

Unfortunately, one major problem presented by the videotape records made during bank robberies is that most robberies occur in separate branches, which means that the researcher has to contend with a large number of spatial and other contextual variables. In addition, most bank security cameras are focused rather

tightly on the area immediately in front of the teller's counter so they can record the suspect's face and hands during the passing of notes or money. This means that many of the social and spatial factors surrounding the transaction are off camera. In sum, the bank tapes appear to introduce a very large and cumbersome pool of contextual variables for the limited amount of behavioral data actually obtained.

By contrast, the videotapes produced during the transactions conducted in undercover "sting" operations appear to overcome some of these difficulties. First, by attempting to simulate typical setups for fencing stolen property, the undercover "sting" brings all of the of suspected offenders to a single location manned by two or three undercover police officers. Thus, the social and spatial context has a great deal of continuity from one transaction to the next. Second, because the "sting" involves protracted negotiations over a period of time, the cameras are generally set up to encompass more of the setting than the bank security cameras. Theoretically, this makes it possible to analyze more complete sequences of behavior than would generally be possible for a bank robbery. In sum, the "sting" records promise to provide a rich pool of behavioral data, while presenting the researcher a relatively simple body of contextual variables. Thus, it appears that the "sting" operations provide a more appropriate starting point for assessing the usefulness of videotapes obtained at crime scenes for additional types of behavioral analysis.

The specific intent of this project is to explore the usefulness of videotapes gathered in conjunction with various types of undercover "sting" operations for research on criminal behavior. Hopefully, this will point to additional aspects of the criminal justice system in which videotape recordings might be useful and suggest new strategies for developing research in those areas.

Procedure

Videotapes of 78 transactions or "buys" from four different "sting" operations

were obtained from the Georgia Bureau of Investigation (GBI) for use in this study. The 19 or 20 tapes selected from each operation represent approximately 25% of the buys recorded at each location. Although it was originally planned to have the agents who ran each operation select high quality tapes for use in the study, this was only possible for two of the sites. The tapes from the other two operations were selected at random by the Georgia Tech research team because the agents who worked those sites were unavailable due to other assignments. This dual procedure had one advantage over the selection process originally planned. While the tapes selected by the agents may have been more representative of the behavior occurring at each site, the tapes selected by the research team appear to have been more representative of the range of video and audio quality to be found on the tapes themselves.

Once the tapes had been obtained they were catalogued and reviewed to determine the videotape quality and behavioral content of each buy. Short narrative descriptions of each buy were prepared as the tapes were first reviewed. The purpose of this first review was merely to document the nature of the material in hand. No systematic analysis procedures were used at this stage and the observers were encouraged to include subjective assessments of what they saw. Examples of two of the narrative descriptions are as follows * :

Record Store - Buy 22

Two black males: Douglas and Kenneth. The agents are unhappy with Douglas and there are some very uneasy words. One of the agents scolds them for being seen. They bring in a TV. Both subjects stand in the middle of the room and one of them stands in front of the camera a great deal. Douglas argues with the agents. There is much haggling and things become heated. Kenneth stands off to the side and listens. This is a tense conversation. They talk about a future deal and finally make a deal on the TV. This is a good tape.

* The names of all subjects referred to in this report have been changed to conceal their identities.

Warehouse - Buy 4

Lloyd: selling a tool set. Lloyd seems very serious. He sits on the edge of the desk and does not look around very much. He is already on the desk when the tape begins and he stays there the entire time. There is much talk and they take their time looking over the tools. Lloyd is an employee of a major retail chain who is stealing tools and selling them through this operation. When the agent produces the money to pay him, Lloyd rises to receive it. They stand and talk for a while after the deal is made. Lloyd seems very happy with the whole set-up. He even leaves his home address.

The 78 videotapes that were catalogued and reviewed appear to have covered a wide spectrum of "sting" subjects and settings. The subjects ranged from kids in their mid-teens who came in with a friend to sell something they had just shoplifted to a middle-aged "pro" who drew upon a cadre of local teenagers to do his leg work. The settings included a private residence, a storefront operation on a busy thoroughfare, a small record store in a shopping strip, and a warehouse next to a railroad crossing. Floor plans for the first three of these operations are presented in Appendix A. Because the agents in charge were not available, no floor plan for the warehouse operation was obtained.

After all 78 buys had been catalogued and reviewed, it became clear that there were numerous instances in which the same subject or group of subjects appeared on two or more of the tapes. This presented an opportunity to consider the development of relationships between these returning subjects and the agents throughout a sequence of buys. This possibility led to a decision to focus the more detailed analysis on the 10 individuals or groups for whom two or more tapes were available. This subset included 47 of the 78 buys for which tapes had originally been obtained, including one subject for whom 10 buys had been recorded and two subjects with 7 buys each. Composite narratives for each of these returning individuals or groups are presented in Appendix B.

The videotapes for the 10 subjects or groups of subjects involved in two or more buys at the same operation were then subjected to a more systematic time-series analysis. In this analysis, the quality of each subject's behavior was recorded

at ten-second intervals in each of seven behavioral categories. These categories included: (a) activities associated with the transaction itself (inspecting merchandise, haggling over price, etc.); (b) whether the subject was on or off camera; (c) voice volume; (d) body position (sitting, standing, etc.); (e) body movement; (f) hand movements; and (g) smoking or other stereotypic behavior. The levels of each of these categories and the symbols used to display them are presented in Figure 1.

The complete time-series records for Douglas' and Kenneth's Buy #22 are presented in Figures 2 and 3, respectively. The records for Lloyd's Buy#4 are presented in Figure 4.

Sixty-eight such records were prepared for the suspects and their associates who appeared on the subset of 47 tapes. Suspects and associates are defined here as any person or persons who participate directly in any of the transactions throughout a sequence of buys. Thus, Kenneth who was merely a bystander in Buy #22, but later returned to deal directly with the agent, would be classified as an associate. In addition to the 68 detailed records prepared for the suspects and their associates, 10 additional records were made for several of their friends who appear in some of the tapes. A friend is defined simply as an uninvolved bystander who never is seen participating in a transaction. Many of these are girl friends who happen to be tagging along. Unfortunately, time and budget limitations made it impossible to prepare such records for the agents who participated in the transaction. Although this left a gap in the records, the omission had little effect on the final analysis. A summary of the activity and exposure records prepared for the 68 suspects and associates and for their 10 friends is presented in Appendix C.

In addition to recording data for the seven classes of overt behavior, the location of each subject was also plotted on a floor plan of the operation. The location plans for Douglas' and Kenneth's Buy #22 are presented in Figures 5 and 6.

| | |
|--|--------|
| (a) <u>Length of Buy</u> | |
| Length of time before mdse. emerges | \|\|\|\|\| |
| Time spent analysing mdse. | ===== |
| Time when money is brought into question | ===== |
| Money changes hands | \|\|\|\|\| |
| Time until seller leaves | \|\|\|\|\| |
| (b) <u>On/Off Camera</u> | |
| On Camera | xxxxxx |
| Off Camera | |
| (c) <u>Voice Volume</u> | |
| High | ..... |
| Medium | +++++ |
| Low | ..... |
| (d) <u>Body Positions</u> | |
| Standing | ΔΔΔΔΔ |
| Sitting | ▽▽▽▽▽ |
| Leaning | ↑↑↑↑↑ |
| (e) <u>Body Movement</u> | |
| High | ..... |
| Medium | +++++ |
| Low | ..... |
| (f) <u>Hand Movement</u> | |
| At Rest | ~~~~~ |
| Pointing | +++++ |
| Explaining | ooooo |
| Clasped | ←←←←← |
| Holding | ===== |
| (g) <u>Smoking</u> | |
| Smoking | xxxxxx |

Figure 1: Operational and behavioral coding categories and symbols used in the time-series analysis.

Length of Buy

=====

On/Off Camera

xx xxxxxx xxxxx xxxxxx xxx xxxx

Voice Volume

.....

Body Positions

ΔΔ ΔΔΔΔΔΔ ΔΔΔΔΔ ΔΔΔΔΔΔ ΔΔΔ ΔΔΔΔ

Body Movement

÷÷ ÷÷÷÷÷÷ ÷÷÷÷÷÷ ÷÷÷÷÷÷ ÷÷÷ ÷÷÷÷

Hand Movement

≈≈ ~~~~~ ←~~~~ ~~~~~ ≈≈~ ~~~~~

Location

H4 I4 H4 I4 H4

1 2 3 4 5 6 7 8 9 10

Figure 2: Time Series Record for Douglas (Buy #22).

∞

Length of Buy

TTTTTTT TTTTTTT TTTTTTT TTTTTTT TTTTTTT TTTTTTT TTTTTTT TTTTTTT TTTTTTT TTTTTTT TTTTTTT

On/Off Camera

xxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxx

Voice Volume

Body Positions

AAA AAAAAA AAAAAA AAAAAA AAAAAA AAAAAA AAAAAA AAAAAA AAAAAA AAA

Body Movement

...

Hand Movement

~~~

Location

H3 I3 H3

1 2 3 4 5 6 7 8 9 10 11

Figure 3: Time Series Record for Kenneth (Buy #22).



Parking

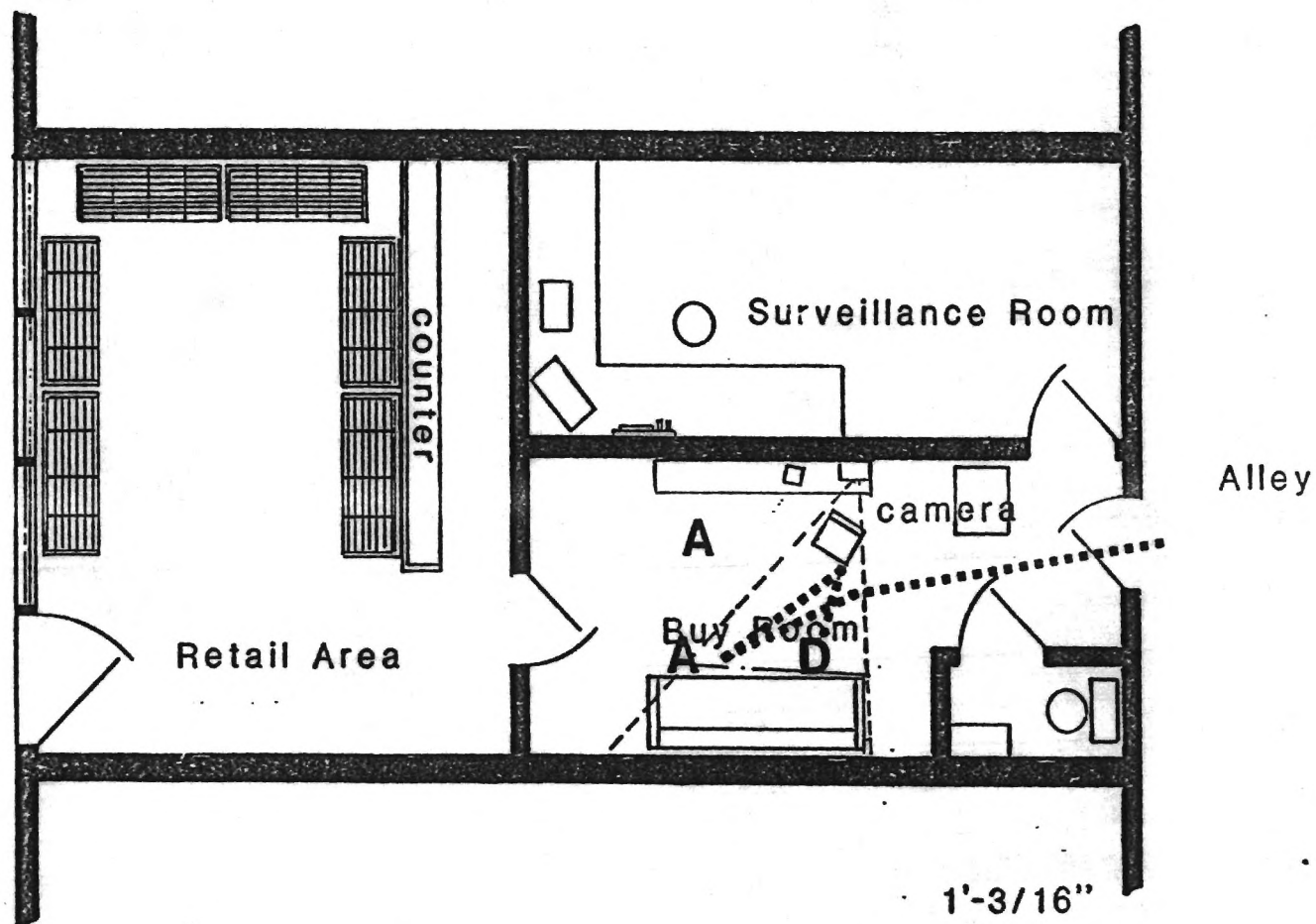


Figure 5: Location Plan for Douglas (D) and the Agents (A) During Buy #22.

Parking

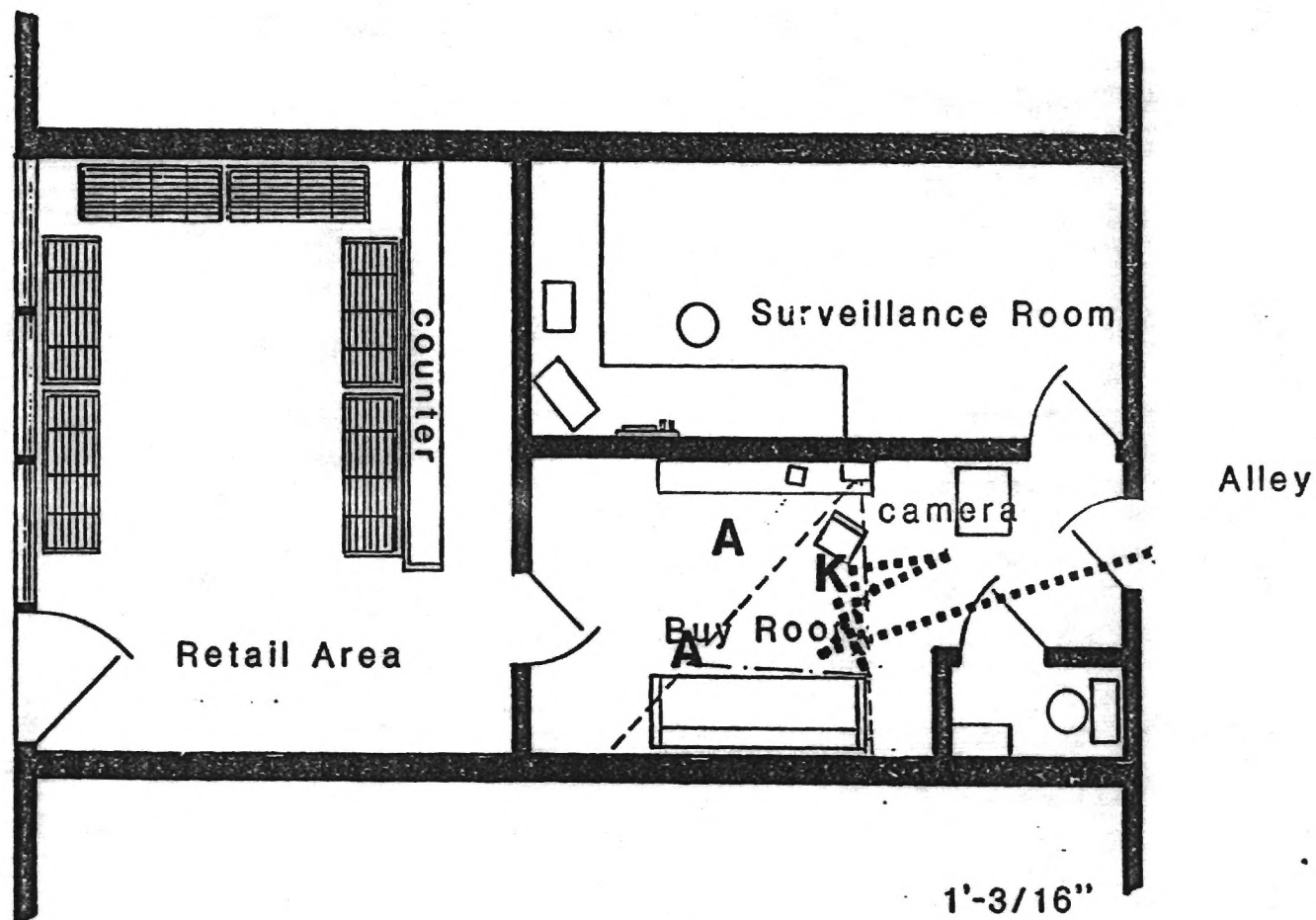


Figure 6: Location Plan for Kenneth (K) and the Agents (A) During Buy #22.



Because no plans of the warehouse operation were ever obtained, a location plan for Lloyd could not be plotted.

As the observers gained experience in viewing and taking data off of the tapes, a number of behavioral patterns were noticed. Furthermore, as the time-series data for the returning subjects were plotted, additional patterns became apparent. The tabular analysis and technical assessments contained in the following sections of this report are an attempt to document these patterns. Before proceeding to those findings and recommendations, it should be noted that the rather heuristic search-test-search again procedures that were used place considerable limitations on the conclusions that can be drawn from this study. However, since neither the contents nor the quality of this videotape material was known at the outset, this was probably the most systematic way to proceed. Still, the reader should be cautioned that what follows represents a preliminary assessment based on a limited sample, and should not be treated as a conclusive body of findings.

#### Videotape Quality

The inferences that can be drawn from the analysis of any data are constrained by the original qualities of those data. In the case of the "sting" videotapes, several serious technical and procedural problems were found.

In general the quality of the tapes studied, in terms of visual resolution and contrast, ranged from poor to fair. In the warehouse and residential operations the resolution and contrast were so low that it was quite difficult to detect small body movements or the passing of small items and money without viewing the tapes five, ten, or more times. In some cases, the action in the foreground was completely lost against the background and could not be identified or classified. While this problem was less severe on the storefront and record store tapes, a lot of behavior

was still lost because of poor resolution and low contrast. Part of this is due to the videotape technology itself. Since television reduces all images to a sequence of 525 horizontal lines, it is very difficult to obtain the kind of resolution associated with Super-8 or 16 mm. film.

Another major factor contributing to the poor resolution and contrast was lighting. Generally, the poorest tapes came from the operations having the lowest lighting levels (the warehouse and residence) while the better tapes came from the settings with greater illumination (the storefront and record store). The levels of lighting used in each operation apparently resulted from the GBI's understandable interest in maintaining an atmosphere that was typical of the setting being simulated. Thus, the storefront and record store operations were brightly lit with the type of fluorescent fixtures commonly found in retail establishments. On the other hand, the lights in the living room of the residential operation were turned off during the daytime, making the daylight admitted through an outside window the primary source of illumination. This created a very dim and diffused light which resulted in low contrast and poor resolution. The warehouse was even darker. So dark, in fact, that on one tape it wasn't even possible to determine the sex of the subject! Generally, it was quite difficult to detect facial or gestural details on the low-light tapes.

The low light problem was further complicated on some of the residential and warehouse tapes if the agents or subjects wore white clothing or if bright lights appeared in the picture. When either of these situations arose automatic aperture adjustments in the camera were triggered which effectively wiped out all detail in the remainder of the picture. This occurred because most video cameras must compensate for the brightest images projected on the vidicon tube in order to prevent permanent "burns" which destroy the tube. However, its effect on the darkest of the "sting" tapes was to destroy what little image there was. This was a

particular problem in the warehouse operation when a garage door near the back of the space was opened to admit a "customer's" car and simultaneously admitted intense glare from reflected sunlight which obliterated the rest of the picture. Flashing Christmas tree lights created a similar problem in the residential operation.

In addition to resolution problems that made it difficult to determine precisely what the subjects were doing, the tapes also presented a depth-of-field problem that made it difficult to determine precisely where the subjects were located in the room. While there was no problem determining location from left to right, movements toward or away from the camera were difficult to localize. The root of this problem lies in the fact that the floor was out of camera range in several of the operations, so there were no cues to indicate precisely where a person whose shoulder and elbow appeared in the foreground was located. This was especially a problem in the record store operation where the room was very narrow and the camera was focused directly on a sofa placed against the far wall. Unless a subject or agent touched the sofa, it was very difficult to determine how close to it they actually were, despite the fact that the lighting and resolution were the best of any of the sites studied.

Another major problem on the tapes was the audio quality. In two of the operations the audio quality was so poor that it was often difficult to determine what was being said. In the warehouse operation, the subjects often wandered far beyond microphone range. The combination of the poor video resolution and the poor audio pick-up even made it difficult to determine who was talking on some of the tapes. While the poor resolution and contrast, low light, depth of field, and audio difficulties exhaust the problems encountered on the tapes themselves, there were other problems associated with videotape quality.

Long periods when the subject was off camera were found on many, if not most, of the tapes reviewed. Part of this was related to the way in which the

cameras were operated. In almost every transaction analyzed, the videotape did not start until the subject was already in the room and the negotiation already in progress. Even after the camera was turned on it was not possible comprehend the image on the tape until the camera had a chance to warm up and the image stabilized. In some cases, particularly short transactions, this lack of information about the initial entry and greeting made it very difficult to interpret what was going on.

Another problem occurred when one subject moved into camera range in such a way that he or she obstructed the view of other subjects or agents. While this type of obstruction is common in any naturalistic observation, some of the problem encountered on the "sting" tapes seems to be attributable to camera placement. For example, in the residential operation a shoulder-height camera was concealed by a one-way mirror surrounded by provocative photographs that were intended to lure the subjects into close camera range. However, whenever a subject approached this mirror their presence in the foreground obstructed all of the other activity in the room. In some cases, the loss of this information was critical for understanding what was taking place.

From a research viewpoint, the most serious problem found on the tapes was the fact that the subjects were often out of camera range altogether. Although a handful of the subjects were on camera 100 percent of the time, the average for the 68 subjects whose transactions were analyzed in detail was only 72.73 percent. One subject was only on camera 9.80 percent of the time during an eight and one half minute transaction! Exposures of 50 percent or less were found for 17 of the 68 subjects, or one fourth of the total. A more detailed breakdown on exposure times is included in Appendix C. The average percentages of time that the subjects were on camera varied between the four operation studied, as follows:



|                            |        |
|----------------------------|--------|
| warehouse (28 subjects)    | 79.33% |
| storefront (15 subjects)   | 78.28% |
| residence (4 subjects)     | 62.61% |
| record store (21 subjects) | 53.52% |

Further variations were found between two different camera set-ups at different sites. In the storefront and record store operations, fixed cameras were always focused on the same parts of the room. However, in the warehouse and residential operations the cameras were rotated and refocused to track the primary subjects or zoom in on the major portion of the transaction taking place, such as the passing of money from the agent to a suspect. The average percentages of time that the subjects were on camera varied between the fixed and moving camera operations as follows:

|                                          |        |
|------------------------------------------|--------|
| fixed camera (storefront & record store) | 67.50% |
| moving camera (warehouse & residence)    | 77.96% |

Obviously, the moving cameras picked up a bit more of the action than the fixed camera. This was especially helpful since the two operations that utilized the moving cameras were also the ones that had the lowest light levels and the poorest image resolution. Despite this partial compensation for poor resolution, it was still difficult to analyze the behavioral patterns of subjects who were off camera between 22 percent and 32.5 percent of the time. If the interpersonal relations between subjects are to be analyzed, this problem is complicated further. Table 1 shows the percentages of time that each subject is on camera as a function of group size and the type of camera set-up used. Note that these data are for the suspects and their active associates only. A separate column for their uninvolved friends is also included for purposes of comparison.

|               | <u>Singles</u> | <u>Doubles</u> | <u>Multiples</u> | <u>TOTAL</u> | <u>(Friends)</u> |
|---------------|----------------|----------------|------------------|--------------|------------------|
| Fixed Camera  | 83.13%         | 55.66%         | 45.66%           | 67.50%       | 35.56%           |
| Moving Camera | 93.03%         | 70.93%         | 69.93%           | 77.96%       | 41.67%           |
| TOTAL         | 86.97%         | 65.02%         | 58.23%           | 72.73%       | 36.80%           |

Table 1: The percentage of each subject's time on camera as a function of the number of subjects and friends (but not agents) present.

Two things are quite apparent in Table 1. First, as the groups got larger, the percentages of time that any subject was likely to be on camera decreased for both types of camera operation. Second, the moving camera captured more of each individual's activity than the fixed camera for all group sizes. Obviously, the moving camera should capture more of each individual's behavior on tape than the fixed camera. However, when two, three, or four people came in together, the moving camera recorded only about 70 percent of their behavior which is probably not sufficient to analyze any patterns of behavior in detail. One final note on Table 1 is the fact that both camera set-ups were more effective in recording the behavior of the suspects and their associates than that of their tag-along friends. Although this is quite appropriate for identification purposes, the fact that their uninvolved friends were seldom on camera could severely limit the possibilities for using these tapes for research on the broader interpersonal aspects of criminal transactions.

Perhaps, the most important issue from an interpersonal viewpoint is how often all of the subjects were on camera simultaneously. Data for various group sizes and different camera set-ups are presented in Table 2.

|               | <u>Singles</u> | <u>Doubles</u> | <u>Multiples</u> |
|---------------|----------------|----------------|------------------|
| Fixed Camera  | 83.13%         | 27.97%         | 3.85%            |
| Moving Camera | 93.03%         | 56.41%         | 30.00%           |
| TOTAL         | 86.97%         | 41.86%         | 17.86%           |

Table 2: Percentage of time that all subjects and friends were on camera simultaneously.

From these data it is clear that when two or more subjects and their friends entered a "sting" operation together there were relatively few occasions during which all appeared on camera simultaneously. Although the moving camera again performed better than the fixed camera, percentages of simultaneous coverage in the range of 30 percent to 56 percent are not enough to conduct detailed analyses of interpersonal behavior for full transactions.

Note that due to time and fiscal limitations, comparable data for the agents who participated in these transactions were not analyzed. Therefore, the figures given in Table 2 should be regarded as upper limits of the percentages of time that all participants were recorded simultaneously for the various group sizes and camera set-ups. From these data it appears that the high percentages of time that one or more participants are off camera during the transactions would place severe limitations on the types of interpersonal analysis that could be conducted using these tapes.

This problem of having one or more of the participants off camera can be partially attributed to the fact that none of the camera set-ups covered the entire room in which the transactions were conducted. Table 3 shows the percentages of the floor area that were within camera range at each of the four "sting" operations studied. The maximum percentages of space covered by a fixed field of view and

the total percentages covered when the camera was fully rotated are shown separately. From these data it is clear that the subjects were actually on camera more of the time than would have been predicted from the amount of space that was within camera range. The only exception to this was for the rotating camera at the residential site, and this may be partially attributable to the small number of subjects analyzed at that site. Although these figures begin to explain why the subjects were frequently off camera, they do not alter the fact that the resulting loss of data limits the usefulness of these tapes for many kinds of behavioral research. On the other hand they do suggest that better subject coverage might be achieved if the cameras were placed so that they covered more of the rooms in which the transactions occurred.

|              | <u>fixed</u><br><u>coverage</u> | <u>rotating</u><br><u>coverage</u> | <u>percent</u><br><u>on cam.</u> |
|--------------|---------------------------------|------------------------------------|----------------------------------|
| residence    | 41.78%                          | 80.00%                             | 62.61%                           |
| storefront   | 33.71%                          | 33.71%                             | 78.28%                           |
| warehouse    | 31.79%*                         | 63.05%*                            | 79.33%                           |
| record store | 24.00%                          | 24.00%                             | 53.52%                           |

Table 3: Percent of space that was within camera range for each type of camera operation.

For the purposes of research on interpersonal behavior during criminal transactions, the overall quality of the "sting" videotapes studied was not very promising. The resolution on the tapes themselves was often too poor to permit the discrimination of facial and gestural details when the subjects were on camera. In addition, the individual subjects were often off camera as much as 50% of the

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\* Because no floor plans were available, the data for the warehouse site are estimates made from the tapes themselves.



time, and the period when all participants in a transaction were on camera simultaneously often amounted to less than 50% of the time. In order to use available videotapes of "sting" operations for any kind of systematic behavioral research, one would have to select tapes quite carefully on the basis of image quality and the amount of time the subjects appear within camera range. However, if given the opportunity to structure a "sting" from the outset, it would not be difficult to overcome most of the qualitative problems described above and to produce videotapes that would be very useful for many kinds of behavioral research. Several of these possibilities are discussed in later sections of this report.

### Interpersonal Behavior

Despite the initial conclusion that the "sting" tapes reviewed in this study might be of limited use for behavioral research, the very existence of such rich visual records of criminal transactions poses a research potential that should not be dismissed prematurely. For example, while the tapes obtained from the GBI clearly present the researcher with some major problem, the technology exists to correct most of the qualitative deficiencies noted in the last section, particularly if the research benefits of such operational adjustments can be demonstrated. In this section and the next, the potential research benefits of the "sting" videotapes will be assessed in terms of the opportunities and limitations presented by the GBI tapes that have been reviewed. In the final section of the report, recommendations for improving the quality of the videotapes to more adequately meet the demands of behavioral research will be presented.

Traditional views of behavioral research would suggest that the interpersonal behavior exhibited during any given "sting" transaction is situation-specific and

that its proper analysis must incorporate a number of personal and other contextual factors that are not accessible using observational records alone. However, recent advances in the study of kinesics (Birdwhistell, 1970) and proxemics (Hall, 1966) have raised new possibilities for studying certain aspects of interpersonal behavior without having to consider supplemental archival data. Among the aspects of behavior that currently appear to be amenable to systematic research using naturalistic visual records alone are the following:

- patterns and sequences of eye contact and gaze aversion.

- initiation and reciprocation of verbal and non-verbal cues.

- uses of props and distal objects as displacement mechanisms.

- patterns and sequences of space apportionment and distancing strategies.

The key theoretical frameworks within which these observable manifestations of behavior can be analyzed to explain social interaction have been elaborated in detail by Argyle, 1967; Kendon, 1967; Sommer, 1969; Goffman, 1969; von Cranach, 1971; Altman, 1975; and Schefflen, 1976. This work will not be reviewed in detail here, except to indicate key areas in which it suggests possible linkages to the study of criminal behavior in naturalistic settings.

In general, studies have shown that eye contact, subtle tonal inflections, and non-verbal gestures like head tilts, eyebrow movements, and crossed legs play a significant role in synchronizing the participation of two or more people in a social situation and in signifying the relationships between those people. The detailed analysis of such patterns from the "sting" tapes could have the potential for determining the degree of complicity of the various parties in the criminal acts at issue, the degree to which the information they give is truthful, their allegiance to one another and to the agents, social or even pathological tendencies, and the manner in which the communication skills of the agents impact on the responsiveness of the subjects.

Studies have also shown that gaze aversion and displacement activities like tossing paper wads into a can or thumbing through magazines serve to cut off direct interpersonal contact, thereby lowering arousal and stress levels on the part of one or more of the participants in a social situation. With regard to the "sting" tapes, these patterns could be interpreted as indicators of tension or conflict among the subjects or between the subjects and the agents. They can also serve as indicators of avoidance or withdrawal from the situation and of covert attempts to manipulate the transactions to some advantage.

Finally, research has shown that patterns of interpersonal distancing and floor apportionment are quite reliable mechanisms for signifying the status of the various participants in a social situation and for signifying the range of behaviors that are considered appropriate within a social context. Therefore, such patterns observed on the "sting" tapes could be used to determine the relative dominance or submissiveness of the subjects or the agents, the types of interpersonal norms that are established and defended among the participants, and any subcultural or deviant departures from those norms on the part of individual subjects or groups of subjects.

Taken as a whole, the ability to use the "sting" tapes to analyze such behavioral patterns could lead to new insights on the manner in which certain types of criminals deal with and reinforce one another, and on the ways in which they seek and test out new opportunities among unacquainted associates. It could also be useful in assessing the effectiveness of the actions of undercover agents in comparable police operations. Thus, research findings on the behavior of the participants in undercover "sting" transactions could ultimately have applications to other crime scenes, such as bank robberies, hostage crises, or even isolated criminal acts against individuals or property.

Unfortunately, most of the research methods that Birdwhistell, Hall, and their colleagues have developed for analyzing social situations require visual records of a much higher quality than that found on the tapes reviewed in this study. Some of the difficulties that were encountered in trying to encode each type of data from the GBI "sting" tapes are summarized below.

Patterns of eye contact and gaze aversion were almost impossible to detect on the sample of tapes reviewed. The major problem seemed to be the poor resolution and low contrast that made it technically impossible to determine the position or focus of most subject's eyes. Even where eye movements could be roughly estimated, the fact that one or more of the subjects was often off camera made it difficult to identify the object of a person's visual attention. Even if one were to select only the best tapes for analysis, it is doubtful that the degree of image resolution characteristic of television would be sufficient for this kind of fine grained research.

The initiation and reciprocation of verbal and non-verbal cues was also difficult to detect on the sample of tapes reviewed. The effect of poor audio quality on the detection of verbal exchanges was discussed in the last section. The poor quality of the video image, particularly the low light levels in two of the operations, also made it quite difficult to detect subtle facial gestures and hand movements. In addition, the facts that many of the tapes did not start until the transaction was already underway and that some of the key participants often wandered off camera also created problems, because too much of the social context was lost. In effect, the tapes often failed to capture enough of the interpersonal context to enable the researcher to comprehend each participant's role in the transaction.

Although the audio problems and the substantial chunks of time that key participants were off camera could be resolved by simply selecting the best tapes,



the degree of image resolution generally found on videotape would greatly limit the value of those records for the types of data take-off called for by Birdwhistell, Kendon, and others. While gross body movements, such as crossing one's legs or turning one's head can be detected easily on tapes of moderate to high quality, the subtle winces and finger taps that provide so much of the data needed to comprehend non-verbal synchrony or dissynchrony are often lost among the alternating scan lines that make up the video image. The scan lines present an even greater problem if stop-action analysis is attempted, because minor facial or body movements lose almost all of their form and context when the action is stopped on videotape.

The use of props and distal objects as displacement mechanisms could be detected so long as the props and the objects used were fairly large and within camera range. For example, one subject who spent several minutes tossing a small football in the air right in front of the camera could be observed quite easily, while the behavior of another subject who fiddled with some of the merchandise lined up on the shelf next to the video camera made no sense at first. Later, when the floor plans of the setting were examined, it became clear that the focus of the latter subject's attention had been the objects on the shelf. Generally, with the exception that documentation of the locations of all manipulable objects in the room can explain certain behaviors directed beyond camera range, displacement activities presented the same analysis problems as those just described for non-verbal cues -- big things could be identified and small things couldn't.

Finally, the patterns and sequences of space apportionment and distancing mechanisms presented a mixture of research opportunities and limitations. So long as everyone was on camera, it was rather easy to determine where people were in relation to one another and to the contents of the room. The only major problems that occurred in this regard were when the subjects were located at different

distances from the camera along common lines of sight. In these cases, precise locations could only be established if the point where they touched the floor or some other reference point appeared on camera. On the other hand, the orientations of the subjects and their spacing from left to right could be determined on all but the poorest tapes studied. The reason that it was relatively easy to determine locations and orientations is that the position of the whole body is such a large-scale phenomenon that it was completely unaffected by the pattern of scan lines that had confounded the discrimination of finer details. Thus, resolution was not a problem in determining interpersonal spacings on the "sting" tapes.

However, this research opportunity was serious diminished by the facts that many of the participants in the transactions were often off camera and that all of the participants were seldom on camera at the same time. From a research standpoint this means that while videotape is technically capable of providing adequate data for proxemic analyses, the context within which such data gain meaning was often lost on the GBI tapes. On the assumption that good behavioral research could be done on spacing behavior if only those tapes where the subjects always appear on camera are selected, the discussion of prospects for research in this area could be concluded at this point. However, if the full implications of proxemic behavior are considered, the possibility exists that the high percentages of time that the subjects were out of camera range might actually have been a function of normative behavioral pressures operating within the "sting" settings.

First consider that the underlying premise of Hall's concept of proxemics is that people will maintain distances between themselves that are appropriate to their current situation. The distance ranges that Hall specifies are summarized in Table 4. Many of these distances have been corroborated by subsequent research (see Altman, 1975). From Hall's definitions of the four levels of interpersonal involvement, it would appear that the social level would be the most descriptive of

the types of "sting" transactions being considered in this study. Thus, the subjects and agents should normally maintain from 4 feet to 12 feet between themselves during the transactions, except when they are passing money. Furthermore, Hall's definitions suggest that distances closer to 4 feet would indicate a fairly comfortable relationship between agents and suspects and that distances closer to 12 feet would indicate some caution or hesitation on the part of the suspects. Therefore, the suspects should often be expected to maintain from 7 feet to 12 feet between themselves and the agents, particularly on the initial visits or when negotiations hit a snag on subsequent visits.

|                      | <u>near</u><br><u>phase</u> | <u>far</u><br><u>phase</u> |
|----------------------|-----------------------------|----------------------------|
| intimate involvement | touching                    | 6" - 18"                   |
| personal involvement | 1½' - 2½'                   | 2½' - 4'                   |
| social involvement   | 4' - 7'                     | 7' - 12'                   |
| public involvement   | 12' - 25'                   | 25' and over               |

Table 4: Typical of appropriate interpersonal distances for various levels of interpersonal involvement (adapted from Hall, 1966)

Having established that the subjects and agents will frequently require from 7 feet to 12 feet of space between themselves, attention is now directed to the maximum span of the camera ranges for the three sites for which detailed floor plans had been obtained (see Appendix A). These maximum left to right spans and the approximate widths of the sofas that appear in the center of these camera ranges are presented in Table 5.

From Table 5 it is apparent that the camera ranges at several of the sites were too narrow to encompass social interactions at the far phase. In fact, the

|              | <u>camera<br/>span</u> | <u>sofa<br/>width</u> | <u>percent<br/>on cam.</u> |
|--------------|------------------------|-----------------------|----------------------------|
| residential  | 11'-0"                 | 6'-0"                 | 62.61%                     |
| storefront   | 9'-0                   | 6'-0"                 | 78.28%                     |
| record store | 7'-0"                  | 5'-6"                 | 53.52%                     |

Table 5: Maximum widths of the camera range and of the sofas at three of the "sting" sites studied.

camera at the record store operation barely covered the near phase. Furthermore, if the agent was located near the center of the camera range (as was often the case in the residential operation), normal interpersonal spacing mechanisms would tend to drive the suspects and their friends out of camera range! At the record store, the agents frequently stood next to the sofa which placed them on the extreme right hand side of the picture. However, given the very narrow span of the camera image at that site, the net effect of the agent occupying such a position was also to drive the subjects out of range unless they had become fairly comfortable with the set-up and were willing to come within the near phase. The agents who ran the storefront and warehouse operations generally stayed just outside of camera range, on the right hand side of the picture. Interestingly, these two operations had much higher percentages of time when the subject were on camera than either the residential or the record store operations! Unfortunately, the strategy which was most effective for luring the subject into camera range, required the agents to stay out of the picture, thereby diminishing the opportunities for proxemic research.

Another noteworthy observation was that the subjects seldom sat on the sofas with the agents or the other subjects. Since all of the sofas would have required two or more users to come within the near phase of the social range, this observation could be taken as a rough indication that most participants were not all



that comfortable with the "sting" set-ups. In fact, the only time that the subjects and agents came within the near phase of the social range for any sustained period was when they conversed across a desk -- usually with the agent out of the picture.

With regard to territoriality or floor apportionment, it was noticed that the agents usually claimed the end of the room opposite the point where the subjects entered, and that the subjects rarely penetrated the agent's domain. A clear line of demarcation seems to have been maintained in all but 3 or 4 of the transactions. One or two of the subjects who crossed into the agent's end of the room began to act as if they were boxed in and started to pace back and forth -- particularly when the agents stood between them and the point of entry (or exit). Unfortunately, the high percentage of time that the participants were off camera made it difficult to make much sense out of this type of behavior.

Of the four aspects of behavior considered thus far, space apportionment and interpersonal distancing appear to be the most amenable to further research using the "sting" videotapes. This is especially true because full body movements are not vulnerable to the resolution problems that are characteristic of videotape recordings, unless the light conditions are extremely poor. On the other hand, unless large areas fall within the camera range, the very process being studied seems likely to drive the subjects out of view. No doubt, some of these problems can be corrected using other types of camera set-ups and wide-angle lenses. These possibilities are discussed in the final section of the report.

In general, it appears that the "sting" videotapes reviewed in this study are not particularly suitable for the analysis of fine-grained micro-kinesic phenomena such as eye movements and subtle facial gestures due to resolution problems inherent in the videotape technology itself. While most larger scale proxemic phenomena such as displacement activities and interpersonal spacing are less vulnerable to the shortcomings of videotape technology itself, they do require that

the cameras cover larger portions of the settings to be studied than were covered on the GBI tapes. Overall, the tapes that were reviewed seem to have a fairly limited application to research on interpersonal behavior during criminal transactions.

### Spatial Considerations

Although the last section revealed that the "sting" tapes probably have limited value for the analysis of the kinesic and proxemic aspects of interpersonal behavior, there are at least two other aspects of interpersonal behavior which must be considered. These are the effects of time and the effects of space. Both introduce a number of factors relevant to the conduct of the type of transaction being considered and both are somewhat less restricted by the coverage and quality of the videotape image itself.

One of the main reasons for examining sequences of buys by the same individual or group of individuals was to identify any gross behavioral effects over time. For example, the respective lengths of a succession of transactions could serve as an indicator of the levels of trust or confidence that had developed between the subjects and the agents. One scenario suggests that the first visit should be quite short and the subsequent visits should be of longer duration as the suspects become more comfortable with the agents and with the remainder of the operation. Another, somewhat less likely, scenario would have the first visit be the longest one as the agents and the operation are "checked out" with the following visits taking progressively less time as the subjects become familiar with how the operation works.

In order to explore these possibilities further, the duration of each "sting" transaction was recorded using an electronic stopwatch. In addition to the total

elapsed time, the amounts of time spent inspecting the merchandise, negotiating a price, exchanging money, and hanging around after the sale was concluded were itemized separately. The only major problem encountered during the timing of these phases occurred when the camera didn't start until the transaction was already underway. In these cases it was impossible to determine the duration of the initial phase(s) of the process.

Unfortunately, the analysis failed to reveal any consistent temporal patterns. The lengths of the transactions tended to increase from one to the next as often as they tended to decrease. Of the seven individuals or groups that visited an operation three or more times, the buys got shorter over time for one, they got longer over time for another, and the other five showed no tendency either way. Although the transactions ranged in total length from one minute to over 28 minutes, the only behavioral factors that seemed to affect the duration were the nature or quantity of the merchandise offered for sale and the seller's personal agenda for pushing up the price or fraternizing with the agents. No additional effects were found for the various time periods within the transactions either.

Although this temporal analysis of a series of buys was inconclusive, it dealt with a class of data that was quite easy to record from most of the "sting" tapes. Given more complete sampling, it would appear that such measures of duration on successive occasions could provide a valuable supplement to the less accessible data on proxemic and kinesic patterns described earlier.

While looking at the effects of repeated visits on the length of "sting" transactions, an unexpected pattern was noticed. The average total duration and the average amount of time spent after the sale was concluded were both noticeably different for the warehouse and storefront operations than for the residential and record store operations. These data are summarized in Table 6.

|              | <u>Length<br/>of buy</u> | <u>Time Un-<br/>til Sale</u> | <u>Time Af-<br/>ter Sale</u> | <u>Percent<br/>on Cam.</u> |
|--------------|--------------------------|------------------------------|------------------------------|----------------------------|
| warehouse    | 7:53                     | 5:33                         | 2:20                         | 79.33%                     |
| storefront   | 8:48                     | 6:40                         | 2:08                         | 78.28%                     |
| residence    | 4:50                     | 4:25                         | 0:25                         | 62.61%                     |
| record store | 4:33                     | 4:02                         | 0:31                         | 53.52%                     |

Table 6: Average amount of time spent on the major phases of the transactions at each site.

The data in Table 6 indicate that the transactions average almost twice as long in the warehouse and storefront operations as those in the other two. The average amount of time the subjects lingered after the sale was more than four times as long at these two sites. Even the percentages of time that the subjects were on camera show a similar split.

From an examination of the videotapes it appeared that there were clear spatial differences between the two pairs of sites, with the differences in size being the most obvious. This was supported by the fact that the warehouse, with an estimated 1050 square feet, was the largest of the four buy rooms and the record store, with only 125 square feet, was the smallest. From a proxemic standpoint, such effects of the amount of space available on the amount of time spent in a space seem quite plausible since people with less room to maneuver may be drawn too close to each other, become tense, and want to conclude their business so they can leave. While this explanation held for the warehouse and record store, it fell apart when the storefront and residential operations were considered. On the tape, the storefront operation appeared to be much larger than the residence when, in fact they had 178 square feet and 225 square feet of space, respectively. Although these amounts of space could be interpreted as no real difference, the sharp differences found in the amounts of time spent in these two



operations require a real difference (in the opposite direction) if size is to be considered the primary contributing variable.

Even though the room size explanation proved to be less than satisfactory, its potential relevance to proxemic analysis made it worth pursuing further. For example, the reversals in apparent and actual size between the storefront and residential sites might have been affected by lighting levels. It has been mentioned earlier that the lighting in the storefront was quite bright and uniform while in the residence it was dim and diffused. Although there are no methods available for specifying the effects of illumination on the appearance of room size, it seems plausible that brighter lights could make a one room appear larger than another room that has slightly more floor area, but much less light. To control for this possibility, the data in Table 6 were resorted according to light level and room size. The effects of floor area on the amounts of time spent under two different lighting conditions are shown in Table 7.

|                       | <u>Square<br/>Footage</u> | <u>Length<br/>of buy</u> | <u>Time Un-<br/>til Sale</u> | <u>Time Af-<br/>ter Sale</u> | <u>Percent<br/>on Cam.</u> |
|-----------------------|---------------------------|--------------------------|------------------------------|------------------------------|----------------------------|
| warehouse (dim)       | 1050 *                    | 7:53                     | 5:33                         | 2:20                         | 79.33%                     |
| residence (dim)       | 225                       | 4:50                     | 4:25                         | 0:25                         | 62.61%                     |
| <hr/>                 |                           |                          |                              |                              |                            |
| storefront (bright)   | 178                       | 8:48                     | 6:40                         | 2:08                         | 78.28%                     |
| record store (bright) | 125                       | 4:33                     | 4:02                         | 0:31                         | 53.52%                     |

Table 7: Effects of room size on the lengths of the transactions for dim (warehouse and residence and bright (storefront and record store) settings.

\* Estimated:

The data in Table 7 clearly indicate that when light levels were held approximately constant, the amount of time spent during the transactions was always longer for the larger space than for the smaller space. This provides some support for the notion that room size is an important factor in the average duration of "sting" transactions. When the percentage of time that the subjects were on camera is considered, Table 7 also provides limited support for the proxemic interpretation of these effects. Under both lighting conditions, the subjects were on camera considerably less often in the smaller space than in the larger space. In terms of interpersonal distancing this suggests that in order to maintain appropriate distances between one another the participants were forced to the periphery of the smaller rooms and, therefore went out of camera range. This is somewhat counterintuitive, since there was actually much more space that was out of camera range in the larger rooms (particularly the warehouse) than in the smaller ones. Another interpretation of the effects of room size on duration has been offered by DeLong (1981) who has recently reported that the experience of duration is directly proportional to the perceived scale of surrounding space. Although Hall's proxemics and DeLong's space-time relativity can both account for the findings in terms of room size, neither can explain for the effects of illumination on the experience of scale or duration.

This analysis creates an awkward situation -- room size seems to have played an important part in the duration of the "sting" transactions, but the data are confounded by the fact that the relevant effects of illumination are unknown. This impasse may be due to the fact that the impact of people on one another's behavior has been much more thoroughly conceptualized and researched than the impact of space on the behavior of individuals or groups. However, during the past five years several papers have appeared in the environmental psychology literature which have presented new conceptual frameworks for linking the architectural aspects of environment to interpersonal behavior. Two of these frameworks are Benedikt's

model of Isovists and Isovist Fields (Benedict, 1977) and Archea's model of Visual Access and Visual Exposure (Archea, 1977). Both are based on the presumption that the primary attributes of the physical environment relevant to behavior are the geometric arrangements of walls, doors, and other surfaces or openings that directly affect the quantity and quality of visual information that can be acquired or conveyed from a given position within a bounded setting. Both models elaborate the mechanisms through which architectural systems of surfaces and openings can channel, obstruct, concentrate, disperse, or otherwise localize information about surrounding conditions and events. Both models also specify techniques for measuring the relative amounts of information available at different locations within a given system of physical barriers and channels.

Although neither Benedikt nor Archea clarify the relationships between illumination and the perception of space or time, both introduce other spatial issues which may outweigh the significance of room size or lighting levels in considerations of interpersonal behavior. Among these are the issues of shape and configuration -- especially the manner in which both affect the ability to see a space or whatever is taking place within a series of connected spaces. More specifically, the visual access and exposure model assumes that each person is the center of a constantly changing field of ambient visual information to which their own behavior is a continuous adjustment. One's awareness of emerging social opportunities varies as a function of their ability to see the events and activities occurring around them. This is defined as visual access. Similarly, one's accountability for their own behavior varies as a function of the probability that their own actions can be seen from the areas around them. This is defined as visual exposure (Archea, 1977). Within this framework the likelihood of being aware of changing social opportunities and the likelihood of being held accountable

for one's own actions is theoretically related to a person's location and orientation within an architecturally defined space.

Applying his model to the analysis of interpersonal behavior, Archea suggests that, as the user's of a particular environment sense the potentials for seeing and being seen at different locations they can selectively position themselves to attain their own immediate goals and objectives. For example, a person who is unsure of what others expect of them in an unfamiliar situation might seek high access and low exposure so that they will become aware of most events before those events necessitate an unexpected change in their own behavior for which they might be held accountable. Finally, in an attempt to link these behavioral effects to the organization of space, Archea contends that visual access or the ability to see is highest around the periphery of a space and lowest near the center. Conversely, visual exposure or the probability of being seen is generally highest near the center and lowest toward the periphery.

Several aspects of the visual access and exposure model have been partially corroborated in various architectural settings (Archea, 1980). One situation to which this type of analysis has been applied is the bank robbery -- specifically the degree to which spatial factors influence the selection of banks to rob and the execution of the robbery. Part of this research, involving interviews with bank robbers, has been completed (Dickey, 1980). Since a bank robbery is in some ways analogous to a "sting" transaction, some of Dickey's principal findings are summarized below in the hope that they might provide new insights on impasse involving room sizes and lighting levels that was discussed earlier.

Despite the fact that none of the twelve robbers interviewed expressed any real concern for the presence of surveillance cameras, security guards, or the use of dye bombs, a major concern expressed by two thirds of them was a fear of being seen by people passing the outside of the bank while the robbery was in progress.



This fear of high visual exposure was expressed in terms of the robbers' preference for banks with few windows through which the customer and teller areas could be seen from the outside. In addition to their concern for being seen, half of the bank robbers expressed a separate need to be able to see the entire spatial layout of the bank as the robbery progressed. They made specific note of their need to be aware of everyone who was present and of all locations from which unseen persons might suddenly emerge and turn the element of surprise to the bank's favor. Seven of the twelve went one step further and indicated that the very presence of a closed door to a room that they couldn't see into would discourage them from robbing a particular bank! Overall, the primary concerns of most of the bank robbers interviewed were (a) the degree to which high visual access would enable them to gain control over all persons present and (b) the degree to which low visual exposure would prevent them from being seen in the process of doing so (Dickey, 1980).

What Archea's model suggests and Dickey's findings tend to support is that the key attribute of space relevant to criminal behavior is not size, but rather the extent to which its physical configuration reveals or conceals the places where unknown observers might be lurking. In effect, this is a measure of visual (or acoustic) complexity. If the "customer" can see all of the places that he can be seen (or heard) from, then he is free to concentrate on the transaction and pursue any social agenda that he desires. However, if he feels that he cannot see all of those places, he remains vulnerable throughout the transaction, never quite sure that he and the other people that he actually sees are the only ones aware of what's going on.

Upon reexamining the layouts of the GBI "sting" operations reviewed in this study (see Appendix A), it appeared that visual complexity accounted for many of the temporal effects reported in Table 6. For example, the warehouse was a large

open room with a few pieces of used furniture stored in it. From the videotapes it appeared to have only two doors -- a garage door and the main entry door. As the subjects entered they had to pass through the rest of the space to get to the corner in which the agents had set up a desk to do their "business". The subjects could see all of the remainder of the room and the two doors leading outside from this corner. Although they had plenty of places to wander off to, the subjects remained on camera 79.33% of the time at the warehouse site. Their transactions averaged 7:53 minutes in length and they stayed around for an average of 2:20 minutes after the sale was concluded, which was the longest for any of the four operations studied.

Similarly, the storefront transactions took place in an open, well lit, back room that could not be seen from the street. In order to get in, the customers had to pass through the front sales room, from which they were admitted to the back. Once in the back room, most sat on a sofa from which they could see everything else in the room, including a door to the one space that they had not already passed through. Here the transactions averaged 8:48 minutes in length and the subjects lingered around after the sale for an average of 2:08 minutes. In most respects, the two operations at which the longest and most relaxed transactions occurred and where the subjects tended to stay around the longest after the sale had been concluded, both provided the subjects with ample opportunities to see the entire operation and created few opportunities for being observed without their knowledge while business was being transacted.

By contrast, in order to get from the carport to the living room of the residential operation, the subjects had to pass through a kitchen from which they could see the doors to four rooms along a back hallway which they generally would not be allowed to enter. Although they were aware that there were other rooms in the back of the house, the subjects could not see those rooms from the portions of

the living room in which they usually stood or sat. As the transactions progressed, the subjects were constantly vulnerable to being seen or heard through an open archway that led to the kitchen and hallway. Interestingly, the average transaction at this operation took only 4:50 minutes and the subjects stayed around for an average of only 0:25 seconds after the deal had been finalized, which was the shortest of any of the operations studied.\* One pair of subjects even walked out with two cans of beer that they had been given to entice them into staying longer! From the sample of tapes that were reviewed it also appeared that comparatively few customers ever returned for a second visit to the residential operation.

A comparable pattern was found at the record store where the transactions were conducted in a very small, well lit, back room. Although this room was similar to the one used in the storefront operation, it was much smaller and the customers were required to enter from a back alley instead of through the front sales area. This meant that they would have no knowledge of who was present in the sales area while their transaction was taking place. In addition to the doors to the back alley and the sales room, there were also two other doors leading to rooms the contents of which were unknown. No matter how the subjects positioned themselves in this room, there was always a door just a few feet behind them. Here, the transactions averaged 4:33 minutes and the subjects left within an average of 0:31 seconds after concluding a sale. Most of the subjects never even sat down. On several occasions the sellers either left with their merchandise, only to complete the sale in the alley, or sent an accomplice in to make the sale while they stayed out in the car. In effect, the two operations with the shortest and most tense negotiations and where the subjects tended to leave as soon as the deal was completed, both denied the subjects a first hand opportunity to see several

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\* Since there were only 4 returning subjects at the residential site, this figure was checked against a sample of non-returning subjects and found to be representative.

spaces from which they obviously could be seen or heard.

For comparison purposes these qualitative attributes of the four GBI operations studied are summarized in Table 8.

|                   | <u>warehouse</u>                   | <u>storefront</u>                  | <u>residence</u>                      | <u>record store</u>               |
|-------------------|------------------------------------|------------------------------------|---------------------------------------|-----------------------------------|
| general openness  | very open, with some clutter       | very open, with no visual barriers | ambiguous, with a hidden hallway      | very tight, hemmed in             |
| size and lighting | very large, with dim light         | ample room, with bright light      | ample room with dim, diffused light   | very small, with bright light     |
| doors             | only 2 doors are apparent on tape  | 2 doors, including entrance        | 6 doors, including 4 in the hallway   | 4 doors, including entrance       |
| concealed spaces  | subjects enter via adjacent spaces | subjects enter via adjacent space  | unseen rooms along hallway            | unseen rooms behind 3 doors       |
| visual access     | good view from the corner          | good view of one unknown door      | poor view of the kitchen, hallway     | no view of rooms behind doors     |
| exposure          | low exposure in the corner         | very low exposure in the back room | can be seen and heard through archway | always a door just behind subject |

Table 8: Major qualitative attributes of the selling spaces at the four "sting" operations studied.

If the temporal effects reported in Table 6 are compared with the spatial attributes reported in Table 8, it becomes apparent that the major point of demarcation between those settings in which the suspects appeared to be at ease and those in which they appeared to be tense was the extent to which they could see or be seen by those who might have been sharing the setting with them. In



general, the longer and more relaxed transactions tended to occur where the selling spaces were fairly open and the subjects were steered toward locations from which they could keep their eyes on the rest of the operation. The shorter and more stressful transactions tended to occur in spaces in which the subjects either could not monitor adjacent rooms that they knew very little about or were surrounded by doors to rooms about which they knew nothing. The temporal effects of the two most revealing and the two most concealing settings are summarized in Table 9.

|                        | <u>length<br/>of buy</u> | <u>time un-<br/>til sale</u> | <u>time af-<br/>ter sale</u> | <u>percent<br/>on cam.</u> |
|------------------------|--------------------------|------------------------------|------------------------------|----------------------------|
| revealing<br>settings  | 8:18                     | 6:03                         | 2:15                         | 78.93%                     |
| concealing<br>settings | 4:36                     | 4:06                         | 0:30                         | 54.96%                     |
| TOTAL                  | 7:12                     | 5:28                         | 1:44                         | 72.73%                     |

Table 9: Comparison of the temporal effects for the most visually revealing (warehouse and storefront) and most visually concealing (residence and record store) settings.

Although too few settings and transactions were considered to permit the preceding analysis to be treated as conclusive, it does open new possibilities for incorporating spatial effects into the analysis of crime scene behavior. With the possible exception of the record store operation, these results strongly suggest that the relevance of physical space to the analysis of human behavior extends far beyond the effect of room size on interpersonal distancing to encompass the manner in which architectural layouts affect the availability of the visual and auditory information upon which the regulation of behavior in the presence of others necessarily depends. Although the importance of visual surveillance for detecting the preconditions and occurrence of criminal acts has been elaborated by

Newman (1972, 1980) and Jeffery (1977), the possibilities presented by the isovist and visual access and exposure models shift the vantage point away from the potential victims and witnesses and toward the criminal perpetrators of the acts themselves.

With regard to the "sting" tapes, if the degree of composure or personal control exhibited by subjects engaged in criminal activity can be shown to relate to their ability to see what is going on around them and to the likelihood of their being seen by others, then much can be learned about the kinds of physical settings which facilitate or inhibit criminal activity. From a research standpoint, one major advantage of this kind of spatial analysis is that it relies as heavily on a thorough analysis of the space in which the behavior occurs as it does on the quality or coverage of the observational media used to record that behavior. The major disadvantage is that, to date, far less research has been done on this aspect of spatial behavior than in the areas of kinesic or proxemic communication. Therefore, until the behavioral effects of different positions in various spatial layouts are more fully understood, or until the quality of the media used to record "sting" transactions is improved, some combination of the types of spatial, proxemic, and kinesic analysis already described may provide the most useful tool for studying the patterns of interpersonal behavior exhibited during criminal transactions.

### Conclusions and Recommendations

Before any final conclusions are drawn from this study, it is important to reiterate that the videotapes used in the analysis were gathered by the Georgia Bureau of Investigation for the purpose of identifying and apprehending criminal offenders, and not for the purpose of conducting scientific research on criminal behavior. Therefore, no assessment of the value of these videotapes for the purposes of behavioral research, whether positive or negative, should be

interpreted as an evaluation of the degree to which these recordings fulfilled their initial objectives.

With this qualification in mind, the prospects for systematic behavioral research appear to be mixed, given the image quality and spatial coverage of the videotapes reviewed in this study. Clearly, most of the small muscle movements commonly associated with non-verbal communication could not be detected on the sample of tapes that were examined. Therefore, it was concluded that a detailed analysis of kinesic patterns of interpersonal cueing or synchrony would only be possible with much better image resolution and contrast and with cameras placed such that more of the activity could be recorded. Even then, only the grossest types of body movements could be subjected to detailed kinesic analysis.

Because the effects occur at a much larger scale, proxemic analysis of spatial apportionment and interpersonal distancing is less vulnerable to the deficiencies of image resolution and contrast than kinesic analysis. Unfortunately, on the sample of tapes examined in this study, one or more of the subjects were out of camera range so often that no meaningful proxemic analysis would have been possible. However, it was concluded that if the cameras had been operated so that more of each setting could have been covered from the beginning to the end of each transaction, then very detailed proxemic analyses could have been conducted using the GBI tapes, even without a significant improvement in the quality of the video image. Such analyses would have been further enhanced by the placement of discernable spatial markers on the floors and walls so that the locations of the subjects could have been determined more accurately.

The analysis of the effects of spatial layouts on interpersonal transactions is substantially enhanced by the fact that much of the data required to interpret spatial behavior depends on an accurate description of the setting in which that behavior occurs. Since detailed floor plans were available for three of the "sting"

operations studied, it was actually possible to determine the behavioral options that existed at locations that were both on and off camera and to conduct a preliminary analysis of some very general behavioral effects. Although such an analysis would have been enhanced by more complete camera coverage, it was concluded that the GBI tapes were of sufficient quality to permit a partial analysis of spatial behavior from the standpoint of visual access and exposure, as long as accurate floor plans were available to assist in characterizing the spaces that could be seen from each location or the spaces from which each location could be seen.

In general, the GBI tapes offered few possibilities for analyzing the fine grained details of the activities occurring during "sting" transactions. With better camera coverage, most of the GBI tapes would be sufficient for analyzing certain molar aspects of such interpersonal behavior. Finally, so long as adequate spatial descriptions are available, many of the spatial aspects of the "sting" transactions would appear to be subject to general analysis using the GBI tapes. Overall, it would appear that the "sting" tapes have some value for the analysis of interpersonal behavior during criminal transactions, but that such research will generally require a high degree of selectivity and methodological invention on the part of the investigator. However, with relatively few changes in the spatial and operational aspects of undercover "sting" operations, videotapes of a much higher quality for detailed behavioral analysis could be obtained. Several suggestions to this end are outlined below.

To begin with there appear to be several conflict between setting up a "sting" operation to assure the proper identification of each suspect and in setting one up to capture the full complexity of a socio-spatial situation. Generally, identification requires relatively close shots of the suspect's face and of their participation in the exchange of money. By contrast, situational analysis generally requires comprehensive visual coverage of all portions of the setting at all times. Although



these two objectives may often be in conflict, there are several ways to resolve them both simultaneously within a single undercover operation.

First, in order to assure more complete coverage of the space in which the transactions are to occur, it is important that the camera be located at a point from which the whole room can be viewed at once. Generally, this will be possible from the extreme end of an elongated space or from any corner of a relatively square space. By directing the camera toward the opposite side of the room from either of these locations, it should be possible to record all parts of the setting without having to aim or refocus. Whenever possible, the camera should be directed along the longest diagonal or axis of the space being observed. If recording across one of the shorter dimensions of a space is unavoidable, a wide angle lens should be used. Where possible, the camera should also be mounted above shoulder height so that people in the foreground cannot obstruct the view.

Second, in order to establish the location of all of the subjects within a room it is important that as much of the floor area as possible be within camera range. The best clue to where a person is located is where his or her feet hit the floor. Tile or linoleum patterns on the floor can also be helpful in determining a subject's precise location. Other spatial markers such as light poles and hanging plants should be used to locate subjects appearing in the extreme foreground of the video image.

Third, in order to keep all of the subjects within camera range throughout a transaction it is first necessary to provide adequate support for a full range of their activities directly opposite the camera. Comfortable seating, ashtrays, magazines, and tables on which to display their merchandise should all be available within the central portion of the video image. Care should be taken to provide enough room for the agent(s) and up to 4 subjects with an average of seven feet of space between them. The agents who operate the "sting" should be instructed on

where to locate themselves so that they don't force the subjects out of camera range. Ample room for pacing should also be provided in the foreground or background. In addition to providing for the their physical comfort, the operation should be arranged so that the subjects can see into all of the spaces around them while the transaction is in progress. Furthermore, by leading the subject through as many of the adjacent spaces as possible on their way into they buy room, it should be possible to minimize their concerns about spaces from which they could be seen, heard, or approached by others. Similarly, aside from obvious closets, it would also be helpful to avoid suspicious doors within the selling space that lead to rooms which the subjects cannot enter or see.

Finally, in order to improve the quality of the videotape image itself, lighting levels should be used which provide a high degree of figure-to-ground contrast, thereby allowing the videotape camera to attain its highest resolution capability. In some instances this may require the selection of "front" operations that normally have higher lighting levels than private homes or warehouses. Care should also be taken to position the lighting so that it illuminates the subjects' faces and activities within the "sales" area. Sources of illumination or glare should never be within camera range, not only because they could damage the vidicon tube, but also because they introduce excessively high contrast which can wipe out the rest of the video image. Finally, the camera should always be started before the subjects enter the room so it has a chance to warm up and the image has time to stabilize. If a false start should happen to occur, the tape can always be erased and reset for another subject.

If the above criteria can be incorporated in the initial planning stages of undercover "sting" operations, then a high percentage of the videotapes produced should be quite useful for research on the interpersonal aspects of criminal behavior. Furthermore, most of the modifications suggested for operating and

recording "sting" operations could enhance the primary mission of indentifying suspects just as much as they open new research opportunities in areas like macro-kinesics, proxemics, and the effects of spatial layouts. Such criteria may also be applicable to the development of behavioral research in other situations, such as the use of bank surveillance systems. Overall, any improvement in the availability of high-quality videotape records of actual criminal transactions promises to open a number of new avenues for research on the interpersonal and spatial aspects of crime scene behavior.

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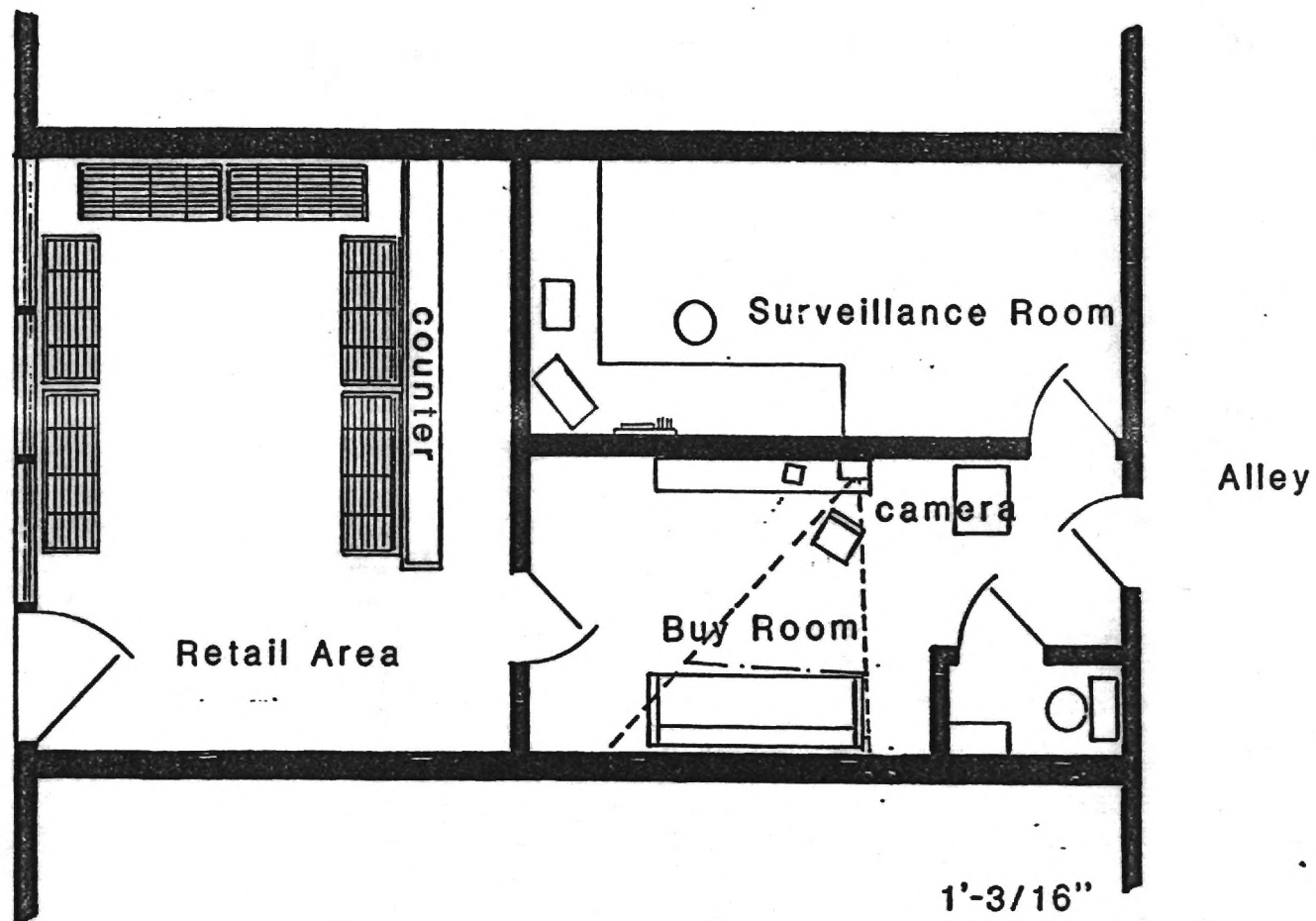
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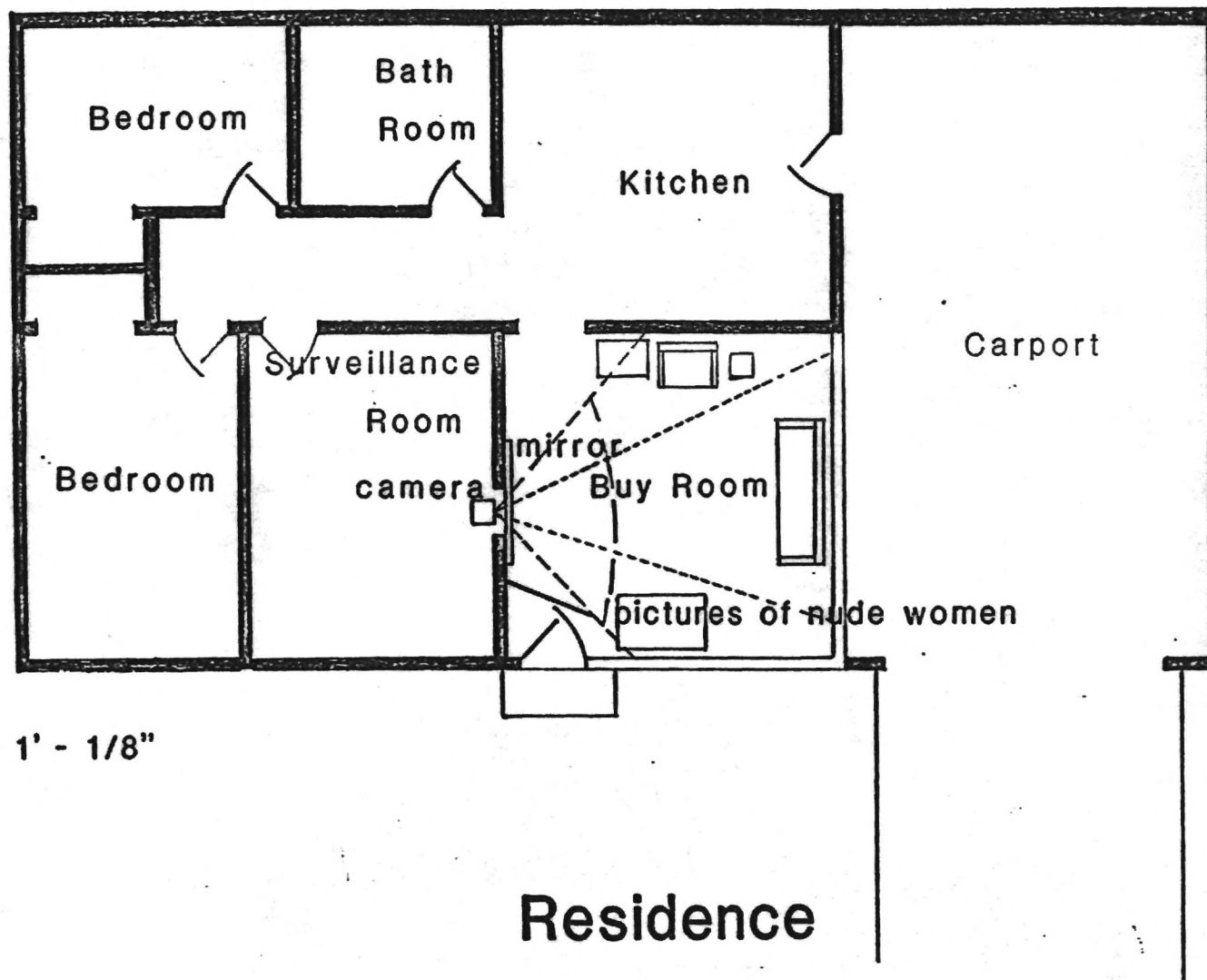
## **Appendix A**

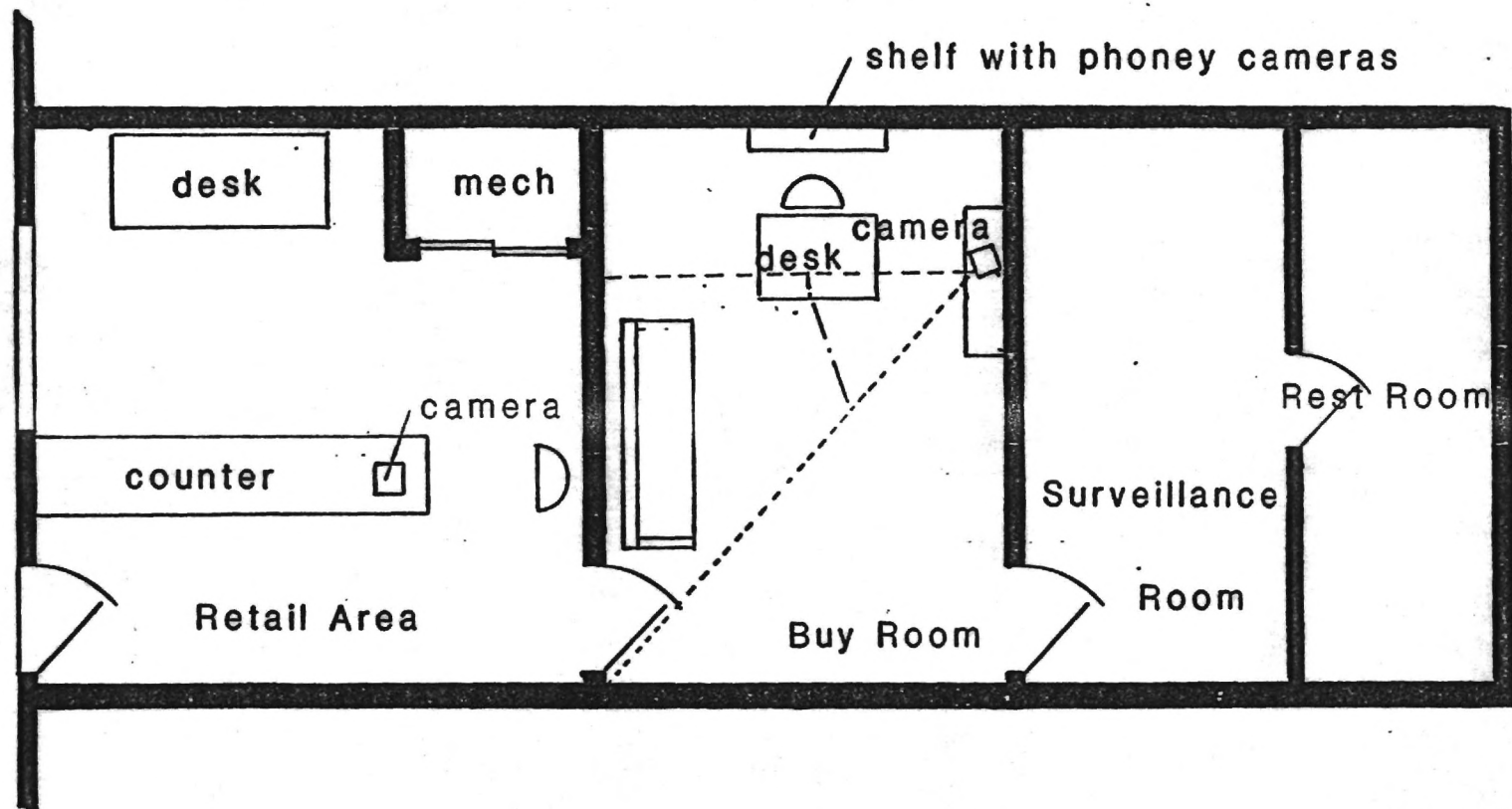
### **Floor Plans of Three "Sting" Operations**

Parking



Record Store



 $1'-3/16''$ 

# Storefront



## **Appendix B**

### **Narrative Descriptions of the Returning Subjects**

## Record Store

### Alfred and Paul

Buys: 34 and 35

Alfred and Paul work as a team and appear to have been in before. This not a complete set of buys.

Alfred and Paul came in with two girl friends in buy 34. Alfred had a stereo to sell. After the sale was completed, Paul tried to get the agent to reconsider a TV set that he had refused to buy earlier. The agent agreed to look at it and a deal was eventually struck. Throughout the transaction Alfred and Paul seemed nervous and kept moving around the room. The girl friends seemed oblivious to what was happening and often got in the way. Shortly after the first deal was concluded Alfred and Paul returned without the girls and made a quick sale on a TV.

### Douglas and Friends

Buys: 4, 11, 12, 13, 14, 15, 17, 18, 22, 39, and 60

Douglas appears to be the leader of a small group who look to him for guidance. The group includes his brother, Kenneth, and an unrelated male named Jess. This may be a complete set of buys for this group.

Buy 4 was longer than most of the others, with most of the time spent haggling over the price for the merchandise. Douglas was very aggressive when it came to arguing about the price. He also tended to ask for much more than (he knew) the agents were willing to pay. In buy 11 he was so dissatisfied with what he was offered that he took his merchandise and walked out. Over time, however, Douglas became quite comfortable with the operation and each successive transaction was concluded more rapidly.

Apparently Douglas called and saw the agents frequently outside of the record store because as more buys were concluded the agents seemed to know more

about him personally, but they seldom talked about his personal life during the transactions. Douglas and his friends usually assumed the same positions in the selling area. So did the agents. Douglas' group also maintained an ample distance between themselves and the agents throughout the series of buys.

Although Douglas took the lead in the first six transactions, his friend Jess finally struck out on his own and came in with another friend in buy 17. He was so encouraged by being able to sell his own merchandise that he returned alone a few hours later to sell another CB radio that he had just shoplifted. Jess and Kenneth came in together during buy 36, but that tape was so bad it was discarded from the sample.

As time went on the agents let Douglas know that they had begun to trust him and were considering letting him in on a really big deal. He seemed cautious, but interested. Shortly thereafter, Douglas decided that he needed to buy some of his merchandise back from the agents to avoid being sent to jail. At about this time the record store was robbed and the agents accused Douglas of having something to do with it. Douglas seemed to be totally intimidated by this and accepted an absurdly low price for some merchandise he had to sell. On the next buy Douglas stayed in the car while his brother, Kenneth, came in and made the sale.

Later Jess returned with a friend who also had something to sell. Although Jess seemed to have graduated to leadership status, he still had none of the confidence initially exhibited by Douglas.

#### Residence

#### Richard and Earl

Buys: 47 and 50

Richard and Earl work as a team and appear to have been in before. This is not a complete set of transactions.

Most of the time in both buys was spent bringing the merchandise into the house. After they placed the items in the middle of the room, Richard and Earl both paced around a lot. Although they didn't appear tense, they did seem to be more anxious to leave the house than to stay around and chat with the agents. At one point the agents gave them both a beer and when the deal was finally concluded they took the cans with them instead of hanging around until they were finished.

In both buys, most of the time was spent inspecting the merchandise and very little time was spent haggling over price. The agent sat on the sofa both times and Richard and Earl both tended to stay in the same part of the room.

### Storefront

#### Arthur

Buys: 10, 12, and 25

Arthur seems to work alone. Although this is probably not a complete set of buys, the first two transactions appear to be his first visits to this operation.

Arthur was very tense and moved around a great deal. He used his hands to explain and describe things to the agent. His hands seemed to move continuously. His location in the room was directly related to the position of the agent and he generally stayed fairly close to the agent. The length of Arthur's transactions increased with each successive visit. This seemed to have had less to do with the magnitude of the transactions than with Arthur's interest in learning more about the operation.

On his last buy, Arthur came in after having been up all night. Although he seemed tense, he still was in full control and his voice volume remained steady.



The negotiation took a long time. Although Arthur attempted to get every dollar he could, the agents didn't yield. He left as soon as the deal was concluded.

### Fat Jack

Buys: 6, 11, and 39.

Although Fat Jack brings a friend in on his first visit, he generally seems to be quite independent. This is definitely not a complete set of Jack's buys.

Fat Jack was apparently interested in getting to know the agents and the operation. His first two buys were very tense. On his first visit he brought a friend who was higher than a kite. After a while the friend left to go to the bathroom and then came back somewhat calmed down. Jack was continually moving from place to place, his hands were always moving in fast jerky motions, and his speech was fast and loud. The actual dealing did not take very long. There was a lot of social conversation and Jack was very quick to volunteer information about himself and where he lived.

His last buy (in the sample) apparently occurred after he had been in a number of times. He now sat on the sofa. His body movements were minimal, although he still conversed with his hands. In contrast with his earlier visits, he now seemed quite relaxed and the whole transaction became a 28 minute social visit during which only one credit card was sold. Jack seemed so relaxed at this point that he hardly cared about the sale. The agents also let Jack think that they had taken him into their confidence by asking if he could arrange a big night on the town for some "important men".

Although Jack sat on the chair in front of the agent's desk for the first two buys, he moved over to the sofa during the last visit. During each of his visits the door to the room remained open and the transactions were conducted with no apparent attempt to lower voices.

## Laura

Buys: 28 and 29

Laura appears to be a novice who is just learning the ropes. While these two buys may not be a complete set, they do appear to be her first two visits to this operation.

Laura brought one credit card on her first visit and seemed to be checking out the set-up. The agents sat behind the desk and Laura sat on the end of the sofa. She said very little and moved very little. However, she seemed to listen intently to whatever the agents had to say. Apparently having been satisfied with the results of her first visit, Laura returned shortly thereafter with a lot of credit cards (most of which were not bought). The second buy was longer than the first due to the additional time needed to analyze the large number of cards that Laura was trying to sell.

## Pete

Buys: 5, 7, 8, 9, 19, 20, 22

Of all the suspects studied, Pete appears to be the most professional. Except for a woman friend who accompanies him on his first visit, Pete always comes in alone. This appears to be a complete set of Pete's buys.

Pete felt out the situation on his first two visits. During both transactions he kept his distance from the agents and was off camera most of the time. After he got the feel of the operation he came back a third time with a lot of credit cards to sell. During the visit he remained on camera for a much longer period than before. This may have been due to the fact that the agents had moved behind the desk, thus enabling Pete to move into camera range without moving closer to the agents. Pete positioned himself in the same part of the room during most of his subsequent buys and rarely ventured into other areas. Buy 8 was Pete's longest

transaction, and its length was apparently due to the number of cards he was trying to sell.

Pete maintained his "cool" throughout most of the transactions and gave the impression that he was very experienced at what he did. Unless he was handling the merchandise, his hands were generally at rest or in his pockets. He was always seen smoking or with a matchstick in his mouth, which he periodically adjusted with his hands. Most of his buys were conducted in business tones and the agents' efforts to get to know Pete met with little success. Buy 19 was an exception to this. It opened with Pete sitting back on the sofa, apparently relaxed and very much at ease. Although he still kept the agents at a distance, the conversation was much more social than on his other visits.

Pete's last buys were more business like. He remained very soft spoken, though he seemed to be fully aware of the potential consequences of his actions. His body movements also suggested that Pete was in complete control of himself. The length of his transactions always seemed to be determined by the amount of merchandise he had to sell.

The only person that ever came in with Pete was his girl friend, who accompanied him on his first visit. She seemed very tense and never stopped walking around the room. She had the wallet in her purse. Shortly after she gave the wallet to Pete she left while he completed the sale.

### Warehouse

#### Mac and Monroe and Friends

Buys: 3, 9, 11, 12, 24, 26, and 28.

Mac seems to be a seasoned operator who works with local teenage recruits such as Monroe, George Brown, and Jimmy. This seems to be almost a complete set of Mac's buys, but there is reason to believe that his accomplices may have

come in on other occasions.

By comparison to most of the other tapes, these were not very good because the poor sound quality made it very difficult to hear what is going on. The camera also frequently shifted from Mac to Monroe and back again. Whenever they sat down, both generally assumed the same positions in the room -- Mac in the chair in front of the agent's desk and Monroe on the sofa next to the desk. Monroe generally seemed more tense and cautious than Mac. For example, Mac frequently sat back with his arms stretched along the chair arms while Monroe usually sat straight up or leaned forward from the sofa. Mac did all of the negotiating and seemed eager to converse with the agents. He also lit a cigarette at about the same point in each transaction. Mac (who was rather fat) seemed rather lethargic and only seemed to move when he had to. By contrast, Monroe moved around quite a bit and always seemed anxious to leave.

Although Monroe appeared to be Mac's primary accomplice throughout the first several visits, George Brown emerged in the number two spot on the last buy. Brown and his friend, Jimmy, had also come in together on an earlier occasion to sell a couple of stereos. From the tapes sampled, it wasn't clear whether George and Jimmy worked with Mac and occasionally ventured out on their own or whether they initially worked independently and joined forces with Mac and Monroe later.

### Lloyd

Buys: 4, 5, 6, 25, and 72

Lloyd works for a retail chain and frequently comes in to sell tools that he has stolen from his employer. This is probably not a complete set of Lloyd's buys.

Lloyd's first visit was spent feeling out the situation. There was some social conversation, but most of the time was devoted to business. The second buy was much more social insofar as Lloyd took a lot of time to talk to the agents about



things that were not related to the sale. Lloyd seemed very interested in getting to know the agents. For example, on his second visit he stayed around and talked for 8 minutes after the sale had been concluded. Any signs of apprehension exhibited on the first visit were gone by now and Lloyd appeared to have accepted the agents as friends. His subsequent buys were a mixture of business and pleasure.

During his later buys Lloyd was treated like a regular customer. A great deal of time was devoted to the inspection of merchandise during each transaction because Lloyd usually brought in a lot of tools. An equal amount of time was usually spent socializing, but only after the deal had been concluded.

On his last visit Lloyd brought two friends along -- Vince who dealt with the agent and another male who merely watched. It appeared that Lloyd had already told them about the set-up and both seemed relaxed. Lloyd appeared especially relaxed as he leaned back and chatted with the agents during buy 72.

#### Thomas and Lester

Buys: 19, 20, 21, 22, 23, and 27

Thomas and Lester seem to work as a team, although Lester frequently comes in alone. While there may have been later buys, this appears to be an unbroken series of buys, beginning with their first visit.

On their first visit, Thomas and Lester came in, transacted a fairly insignificant deal, and left quickly. They seemed to be checking the place out. Lester returned shortly thereafter to sell an organ. Although this buy took a lot longer, Lester remained standing throughout the negotiation and even stayed around for a while after the sale had been made. When they both came in together, Thomas usually dealt with the agent and Lester sat back and took it easy. Thomas appeared to be more business like and to be more sensitive to the potential consequences of what he was doing, whereas Lester seemed more interested in

getting to know the agents.

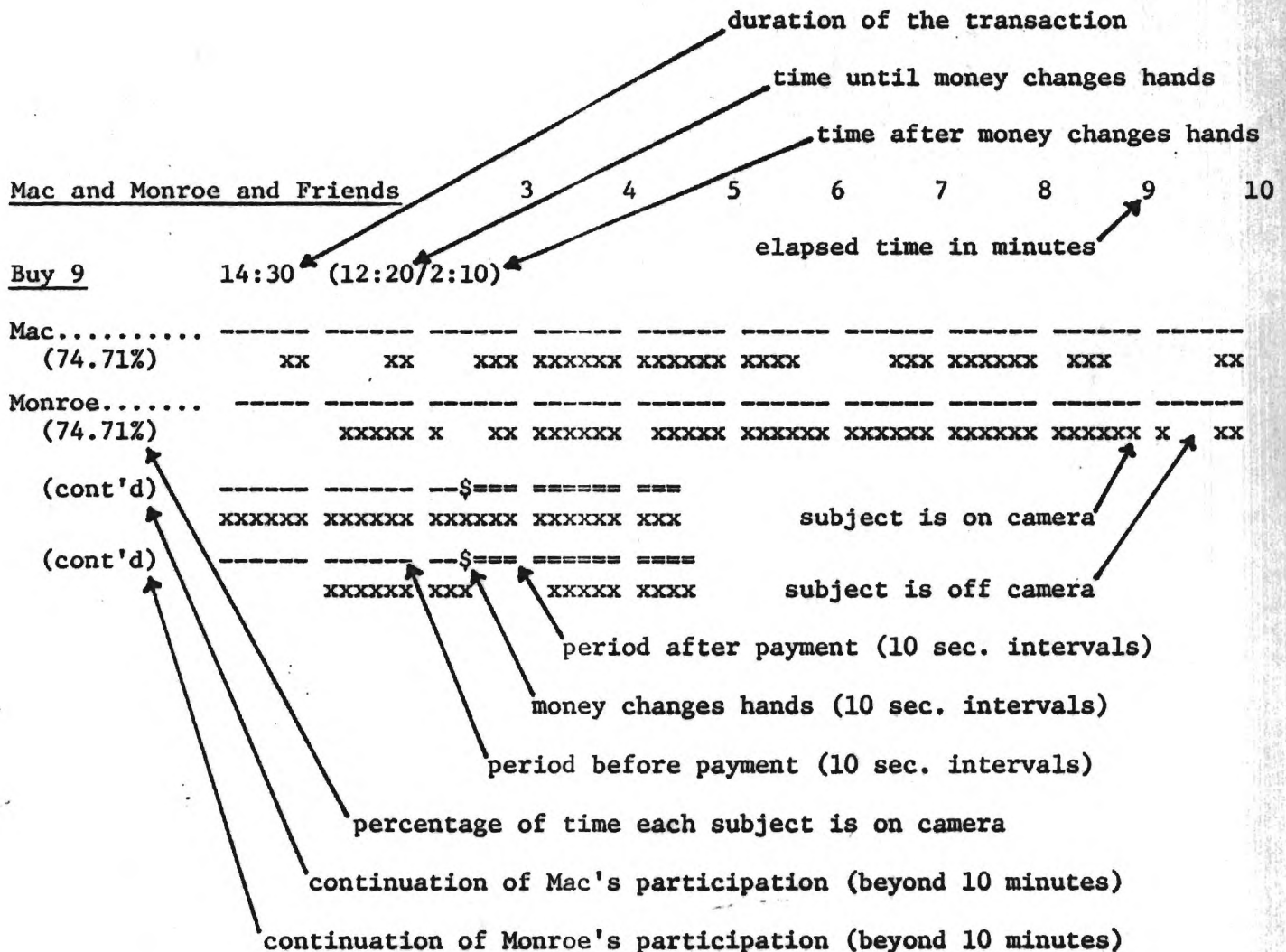
When Thomas and Lester came in together, they generally sat in the same places. When Lester came alone, he would generally remain standing throughout the transaction. They also tended to leave as soon as the deal was concluded when they were together. However, Lester usually stayed around for a minute or so when he was alone. The length of the buys was generally related to the amount of merchandise being sold.

## Appendix C

### Time Series Records for the Returning Subjects

# Time Series Records

The duration of each transaction and the amount of time that each subject is on camera or off camera is presented on the following pages. These records are grouped according to (a) the operation, (b) the person or persons involved in each series of transactions, and (c) the "buy" number assigned by the GBI. The other symbols used in these condensed displays are shown below:





Alfred and Paul

Buy 34

Alfred.....

Paul.....

Friend #1...

Friend #2...

Buy 35

Alfred.....

Paul.....

## Douglas and Friends

Buy 4

Douglas.....

Friend #1....

Buy 11

Douglas.....

Jess.....

Kenneth.....

Douglas and Friends (cont'd)

3 4 5 6 7 8 9 10

Buy 12 4:20 (4:10/0:10)

Douglas..... ----- \$=  
(53.85%) x x xxxx xxxxxx xx

Jess..... ----- \$=  
(56.00%) xx xx xx xxxxxx xx

Kenneth..... ----- \$=  
(48.00%) xxx xxxx xxxx x

Buy 13 4:30 (3:50/0:40)

Douglas..... ----- \$====  
(37.04%) xx x xxx xxxx

Friend #1.... ----- \$====  
(62.96%) xx xxxxxx xxxxxx xxx

Buy 14 3:50 (3:40/0:10)

Douglas..... ----- \$=  
(86.96%) xxx xxxxxx xxxxxx xxxxxx

Friend #2.... ----- \$=  
(60.87%) xxx xxxxxx xxxxxx

Buy 15 3:20 (3:00/0:20)

Douglas..... ----- \$==  
(60.00%) xxx xxxxx xxx xx

Friend #2.... ----- \$==  
(80.00%) xxx xxxxxx xxxxx xx

Buy 17 3:00 (2:30/0:30)

Jess..... ----- \$====  
(94.44%) xxxxxx xxxxxx xxxxx

Friend #3.... ----- \$====  
(22.22%) x xxx

Buy 18 1:20 (1:10/0:10)

Jess..... ----- \$=  
(100.00%) xxxxxx xx

3 4 5 6 7 8 9 10

[illegible]

Kenneth..... ----- - \$ =  
(73.33%)                xxx        xxxxxx        xxx

Jess..... ----- --\$\$= =====  
(76.47%) xxxxxx xxxxxx x x

|                  |   |   |   |   |   |   |   |   |    |
|------------------|---|---|---|---|---|---|---|---|----|
| Richard and Earl | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|------------------|---|---|---|---|---|---|---|---|----|

|              |       |       |        |          |
|--------------|-------|-------|--------|----------|
| Richard..... | ----- | ----- | -----  | \$ \$ == |
| (52.38%)     | x x   | xxx   | xx     | xxxx     |
| Earl.....    | ----- | ----- | -----  | \$ \$ == |
| (81.82%)     | xxxxx | xxx   | xxxxxx | xxxx     |

|              |       |           |          |          |          |            |
|--------------|-------|-----------|----------|----------|----------|------------|
| Richard..... | ----- | -----     | -----    | -----    | -----    | --\$\$==   |
| (47.22%)     |       | xxx x     |          | xxx x    | xxxxxx   |            |
| Earl.....    | ----- | -----     | -----    | -----    | -----    | --\$\$== = |
| (72.22%)     |       | x xxxxxxx | xxxxxxxx | xxxxxxxx | xxxxxxxx | x          |



# STOREFRONT

Arthur                      1            2            3            4            5            6            7            8            9            10

Buy 10            2:00 (1:10/0:50)

Arthur..... ----- \$-----  
(50.00%)    x    xx            x

Buy 12            4:30 (4:10/0:20)

Arthur..... ----- \$ \$==  
(81.48%)    xxxx x xxxxxxx    x x xxxxxxx xxx

Buy 25            10:20 (10:10/0:20)

Arthur..... ----- \$=  
(67.74%)            xx            xxx xxxxxxx    xxxxx xxxxxxx    xxxxxxx    xxxxxxx    xxxxxxx    xxxxxxx    xxx

Pat Jack and Friend            2            3            4            5            6            7            8            9            10

Buy 6            6:50 (1:10/5:40)

Pat Jack..... ----- \$=====    =====  
(95.12%)    xxxxxxx    xxxxxxx    xxxxxxx    xxxxxxx    xxx    x    xxxxxxx    xxxxxx

Friend..... ----- \$=====    =====  
(29.27%)    x x x x x x            xxx x            x            x

Buy 11            3:00 (2:30/0:30)

Pat Jack..... ----- \$====  
(94.44%)    x xxxx    xxxxxxx    xxxxxxx

Buy 30            28:20 (16:40/11:40)

Pat Jack..... -----  
(100.00%)    xxxxxxx    xxxxxxx    xxxxxxx    xxxxxxx    xxxxxxx    xxxxxxx    xxxxxxx    xxxxxxx    xxxxxxx

(cont'd)            ----- \$====  
xxxxxxx    xxxxxxx    xxxxxxx    xxxxxxx    xxxxxxx    xxxxxxx    xxxxxxx    xxxxxxx    xxxxxxx    xxxxxxx

(cont'd)            =====  
xxxxxxx    xxxxxxx    xxxxxxx    xxxxxxx    xxxxxxx    xxxxxxx    xxxxxxx    xxxxxxx    xxxxxxx    xx



Laura

1 2 3 4 5 6 7 8 9 10

Buy 28

3:30 (3:00/0:30)

Laura.....  
(100.00%) -----\$\$===  
xxxxxxxx xxxxxx xxxxxx xxx

Buy 29

7:00 (6:50/0:10)

Laura.....  
(100.00%) -----\$=  
xxxxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx

Pete and Friend

1 2 3 4 5 6 7 8 9 10

Buy 5

8:30 (7:50/0:40)

Pete.....  
(9.80%) -----\$\$= ===  
xx x xx  
Friend.....  
(36.36%) -----( (((((( (not present)) ))))) ))))  
x x x x

Buy 7

9:20 (3:30/5:50)

Pete.....  
(33.93%) -----\$\$===== =  
x xx x x xxxxx xx x xx xx xx xx

Buy 8

21:30 (20:50/0:40)

Pete.....  
(78.29%) xxxxxx xx xxx xx x x xxx x xxxxxx xx xxx xxxxxx xxxxxx  
(cont'd) xxxxxx xxxxxx xxxxxx x xx xxxxxx xxxxxx xxxxxx xxxxxx  
(cont'd) \$\$\$\$\$\$= ===  
xxxxxx xxx

Buy 9

5:10 (4:30/0:40)

Pete.....  
(67.74%) -----\$=== =  
xxxxxx xxxxxx xx x xxx xx x

Pete and Friend cont'd

2 3 4 5 6 7 8 9 10

Buy 19 4:00 (2:10/1:50)

Pete..... \$=====

(100.00%)

xxxxxx xxxxxxx xxxxxxx xxxxxxx

Buy 20 1:30 (1:20/0:10)

Pete..... -\$=

(55.56%)

xxx x

Buy 22 16:30 (14:10/2:20)

Pete.....

(87.88%)

x xxx xxxxx xxx xx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxx x xxxxxxx

(cont'd)

----- \$=====

xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxx

WAREHOUSE

Mac and Monroe and Friends

3 4 5 6 7 8 9 10

Buy 3 5:20 (3:40/1:40)

Mac..... \$== =====

(96.88%)

xxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xx

Buy 9 14:30 (12:20/2:10)

Mac.....

(74.71%)

xx xx xxx xxxxxxx xxxxxxx xxxxx xxx xxxxxxx xxx x xx

Monroe.....

(74.71%)

xxxxxxx x xx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx x xx

(cont'd)

----- \$== =====

xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxx

(cont'd)

----- \$== =====

xxxxxxx xxx xxxxxx xxxxx

Mac. and Monroe and Friends (cont'd)

4 5 6 7 8 9 10

Buy 11 9:10 (5:10/4:00)

Mac.....  
(85.45%)    ---\$==    =====  
xxx x    xxx xxxxxxx    xxx xxxxxxx    xxxxxxx    xxxxxxx    xxxxxxx    xxxxxxx x

Monroe.....  
(67.27%)    x    xxxxx    xxxxxxx    xxxxxxx    xxxxxxx    xxxxxxx    xxxxxxx xx

Buy 12 1:00 (0:50/0:10)

Mac.....  
(83.83%)    ---\$=  
xxxxxx

Buy 24 4:10 (4:00/0:10)

George Brown.  
(56.00%)    ---\$=====  
x x xxxxxxx x    xx xx x

Jimmy.....  
(20.00%)    ---\$=====  
                     xxx    x x

Buy 26 5:10 (2:40/2:30)

Mac.....  
(100.00%)    ---\$==    =====  
xxxxxx xxxxxxx    xxxxxxx    xxxxxxx    xxxxxxx x

Buy 28 8:00 (7:10/0:50)

Mac.....  
(83.33%)    ---\$--    -----    -----    -----    -----    \$====  
xxxxx    xxx xxx xx    xxxxxxx    xxxxxxx    xxx    xxxxxxx    xxxxxxx

George Brown.  
(42.55%)    ---\$--    -----    -----    -----    -----    \$====  
xxxx    xxxxx xx    xxxxxxx x    xx

Monroe.....  
(25.00%)    ---\$(( (((((( (not present) ))))) ))))  
x x    xx

Jimmy.....  
(19.35%)    ((not present)))--    -----    -----    -----    -----    \$====  
                                     xx x    xxx

Lloyd and Friend

1 2 3 4 5 6 7 8 9 10

Buy 4 11:30 (8:50/2:40)

Lloyd.....  
(100.00%)    ---\$=    =====  
xxxxxx xxxxxx    xxxxxxx    xxxxxxx    xxxxxxx    xxxxxxx    xxxxxxx    xxxxxxx    xxxxxxx

(cont'd)  
=====    ==  
xxxxxx xxx



Lloyd and Friend (cont'd)      2            3            4            5            6            7            8            9            10

Buy 5            8:10 (0:20/7:50)

Lloyd..... \$\$====  
(100.00%) xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx x

Buy 6            6:30 (6:10/0:20)

Lloyd.....  
(100.00%) xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxx

Buy 25            16:20 (7:20/9:00)

Lloyd.....  
(100.00%) xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx  
(cont'd) xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xx

Buy 72'            12:00 (5:10/6:50)

Lloyd.....  
(80.56%) xxxxxx xx xxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx x  
Vince.....  
(100.00%) xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx  
Friend.....  
(41.67%) xxxxxx xxxxxx xxxxxx xxx xxxxxx xxxxxx xxx  
(cont'd) x xxxxxx  
(cont'd) xxxxxx xxxxxx  
(cont'd) xxxxxx xxxxxx

Thomas and Lester      2            3            4            5            6            7            8            9            10

Buy 19            2:00 (1:40/0:20)

Thomas.....  
(100.00%) xxxxxx xxxxxx  
Lester.....  
(16.67%) xx



3            4            5            6            7            8            9            10

Lester..... ----- --\$\$= =====  
(85.19%) xxx xx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx

Thomas.....  
(83.33%)

```

Lester.....-----$$=
(90.70%)  x  xxx  xxx  x  xxxxxxx  xxxxxxx  xxxxxxx  xxxxxxx  xxxxxxx  x

```

Thomas.....-----\$=  
(77.08%) XXXX X X XXX XXXXXX XXXXXX XXXXXX XXXXXX X XXX

```

Lester..... ----- $= ==
(70.59%)  xx          xxx xxxxxx xxxxxx xxxxxx xxxxxx xx  xx  xxx

```

```

Lester..... ----- $=====
(54.05%)  x          xx      xxxx xxxxxxx xxxxxxx x

```

```

Lester..... ----- $-----
(88.84%)      XXXXX XXXX X XXXXXX XXXXXX XXXXXX XXX XXXXXX

```

**Behavioral Research Applications of  
Videotapes Made During "Sting" Transactions**

**Final Report**

**Prepared for:**

**Office of Program Evaluation**

**National Institute of Justice**

**U.S. Justice Department**

**Washington, D.C. 20531**

**Order No: 0-0511-J-0JARS**

**By:**

**John Archea  
Principal Investigator**

**College of Architecture  
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**June 10, 1982**

GEORGIA INSTITUTE OF TECHNOLOGY  
ATLANTA, GEORGIA 30332

COLLEGE OF ARCHITECTURE  
RESEARCH PROGRAM  
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June 10, 1982

Dr. Lawrence A. Bennett, Director  
Office of Program Evaluation  
National Institute of Justice  
U.S. Department of Justice  
Washington, DC 20531

Reference: Order Number: O-0511-J-OJARS

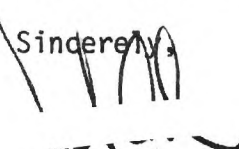
Dear Dr. Bennett:

I herewith transmit twelve copies of the final report entitled Behavioral Research Applications of Videotapes Made During "Sting" Transactions. This submission fulfills all of our outstanding obligations in conjunction with this project.

I have corrected all of the typographic errors that your group had noted, as well as several more that we found. At your suggestion, we also attempted to find resources to obtain and/or review higher quality "sting" tapes than those prepared by the Georgia Bureau of Investigation. Unfortunately, we had neither the funds for travel, nor the time to review additional tapes. Therefore, the final report remains virtually the same as the draft that you reviewed last Winter. Nonetheless, we remain very interested in this area, and would welcome opportunities to extend this work, should additional support become available.

Finally, I want to thank you for your support of this study and for your tolerance of our rather erratic schedule.

Sincerely,

  
John Archea,  
Principal Investigator

cc: John Templer

### Acknowledgements

The author acknowledges the substantial contributions of Thomas Dickey and Scott Reed who catalogued the videotapes, coded and summarized the data, and prepared the graphic displays used in this study. A special note of appreciation is due to Squad Commander Robert Ingram of the Georgia Bureau of Investigation who generously provided access to the videotapes used in this project. Finally, special thanks are extended to Monte Smith and Monica Rowland for their dilligent efforts in preparing the final manuscript.



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## Introduction

During the past several years film and videotape have been used extensively to record various kinds of criminal transactions in progress. These have ranged from surveillance systems in banks and retail establishments to more detailed recordings of highly specialized police actions such as undercover "sting" operations. To date, these kinds of visual (and audio) records have been used primarily as an aid in identifying persons suspected of criminal activity. However, given that many of these films and tapes contain a rich, unobtrusive record of the circumstances surrounding the criminal events in question, they may also provide valuable data on aspects of criminal behavior in addition to the identification and documentation needed to prosecute offenders. At present the utility of such videotape records for research on criminal behavior remains an open question.

In 1979 exploratory research was initiated in the College of Architecture at Georgia Tech which sought to use videotape and film records from security cameras to reconstruct the sequences of behavior exhibited by the perpetrators and victims of bank robberies. The goal of this research was to identify the architectural or spatial parameters of behavior during bank robberies. If such parameters could be identified, then guidelines could be developed for more effectively incorporating the spatial layouts of branch banks into their overall security systems. Although no actual film or videotape footage was analyzed, preliminary work indicated that such research would be feasible and could yield important new information on the conduct of bank robberies (Dickey, 1980; Archea, 1980).

Unfortunately, one major problem presented by the videotape records made during bank robberies is that most robberies occur in separate branches, which means that the researcher has to contend with a large number of spatial and other contextual variables. In addition, most bank security cameras are focused rather

tightly on the area immediately in front of the teller's counter so they can record the suspect's face and hands during the passing of notes or money. This means that many of the social and spatial factors surrounding the transaction are off camera. In sum, the bank tapes appear to introduce a very large and cumbersome pool of contextual variables for the limited amount of behavioral data actually obtained.

By contrast, the videotapes produced during the transactions conducted in undercover "sting" operations appear to overcome some of these difficulties. First, by attempting to simulate typical setups for fencing stolen property, the undercover "sting" brings all of the of suspected offenders to a single location manned by two or three undercover police officers. Thus, the social and spatial context has a great deal of continuity from one transaction to the next. Second, because the "sting" involves protracted negotiations over a period of time, the cameras are generally set up to encompass more of the setting than the bank security cameras. Theoretically, this makes it possible to analyze more complete sequences of behavior than would generally be possible for a bank robbery. In sum, the "sting" records promise to provide a rich pool of behavioral data, while presenting the researcher a relatively simple body of contextual variables. Thus, it appears that the "sting" operations provide a more appropriate starting point for assessing the usefulness of videotapes obtained at crime scenes for additional types of behavioral analysis.

The specific intent of this project is to explore the usefulness of videotapes gathered in conjunction with various types of undercover "sting" operations for research on criminal behavior. Hopefully, this will point to additional aspects of the criminal justice system in which videotape recordings might be useful and suggest new strategies for developing research in those areas.

#### Procedure

Videotapes of 78 transactions or "buys" from four different "sting" operations

were obtained from the Georgia Bureau of Investigation (GBI) for use in this study. The 19 or 20 tapes selected from each operation represent approximately 25% of the buys recorded at each location. Although it was originally planned to have the agents who ran each operation select high quality tapes for use in the study, this was only possible for two of the sites. The tapes from the other two operations were selected at random by the Georgia Tech research team because the agents who worked those sites were unavailable due to other assignments. This dual procedure had one advantage over the selection process originally planned. While the tapes selected by the agents may have been more representative of the behavior occurring at each site, the tapes selected by the research team appear to have been more representative of the range of video and audio quality to be found on the tapes themselves.

Once the tapes had been obtained they were catalogued and reviewed to determine the videotape quality and behavioral content of each buy. Short narrative descriptions of each buy were prepared as the tapes were first reviewed. The purpose of this first review was merely to document the nature of the material in hand. No systematic analysis procedures were used at this stage and the observers were encouraged to include subjective assessments of what they saw. Examples of two of the narrative descriptions are as follows \* :

#### Record Store - Buy 22

Two black males: Douglas and Kenneth. The agents are unhappy with Douglas and there are some very uneasy words. One of the agents scolds them for being seen. They bring in a TV. Both subjects stand in the middle of the room and one of them stands in front of the camera a great deal. Douglas argues with the agents. There is much haggling and things become heated. Kenneth stands off to the side and listens. This is a tense conversation. They talk about a future deal and finally make a deal on the TV. This is a good tape.

---

\* The names of all subjects referred to in this report have been changed to conceal their identities.



#### Warehouse - Buy 4

Lloyd: selling a tool set. Lloyd seems very serious. He sits on the edge of the desk and does not look around very much. He is already on the desk when the tape begins and he stays there the entire time. There is much talk and they take their time looking over the tools. Lloyd is an employee of a major retail chain who is stealing tools and selling them through this operation. When the agent produces the money to pay him, Lloyd rises to receive it. They stand and talk for a while after the deal is made. Lloyd seems very happy with the whole set-up. He even leaves his home address.

The 78 videotapes that were catalogued and reviewed appear to have covered a wide spectrum of "sting" subjects and settings. The subjects ranged from kids in their mid-teens who came in with a friend to sell something they had just shoplifted to a middle-aged "pro" who drew upon a cadre of local teenagers to do his leg work. The settings included a private residence, a storefront operation on a busy thoroughfare, a small record store in a shopping strip, and a warehouse next to a railroad crossing. Floor plans for the first three of these operations are presented in Appendix A. Because the agents in charge were not available, no floor plan for the warehouse operation was obtained.

After all 78 buys had been catalogued and reviewed, it became clear that there were numerous instances in which the same subject or group of subjects appeared on two or more of the tapes. This presented an opportunity to consider the development of relationships between these returning subjects and the agents throughout a sequence of buys. This possibility led to a decision to focus the more detailed analysis on the 10 individuals or groups for whom two or more tapes were available. This subject included 47 of the 78 buys for which tapes had originally been obtained, including one subject for whom 10 buys had been recorded and two subjects with 7 buys each. Composite narratives for each of these returning individuals or groups are presented in Appendix B.

The videotapes for the 10 subjects or groups of subjects involved in two or more buys at the same operation were then subjected to a more systematic time-series analysis. In this analysis, the quality of each subject's behavior was recorded

at ten-second intervals in each of seven behavioral categories. These categories included: (a) activities associated with the transaction itself (inspecting merchandise, haggling over price, etc.); (b) whether the subject was on or off camera; (c) voice volume; (d) body position (sitting, standing, etc.); (e) body movement; (f) hand movements; and (g) smoking or other stereotypic behavior. The levels of each of these categories and the symbols used to display them are presented in Figure 1.

The complete time-series records for Douglas' and Kenneth's Buy #22 are presented in Figures 2 and 3, respectively. The records for Lloyd's Buy#4 are presented in Figure 4.

Sixty-eight such records were prepared for the suspects and their associates who appeared on the subset of 47 tapes. Suspects and associates are defined here as any person or persons who participate directly in any of the transactions throughout a sequence of buys. Thus, Kenneth who was merely a bystander in Buy #22, but later returned to deal directly with the agent, would be classified as an associate. In addition to the 68 detailed records prepared for the suspects and their associates, 10 additional records were made for several of their friends who appear in some of the tapes. A friend is defined simply as an uninvolved bystander who never is seen participating in a transaction. Many of these are girl friends who happen to be tagging along. Unfortunately, time and budget limitations made it impossible to prepare such records for the agents who participated in the transaction. Although this left a gap in the records, the omission had little effect on the final analysis. A summary of the activity and exposure records prepared for the 68 suspects and associates and for their 10 friends is presented in Appendix C.

In addition to recording data for the seven classes of overt behavior, the location of each subject was also plotted on a floor plan of the operation. The location plans for Douglas' and Kenneth's Buy #22 are presented in Figures 5 and 6.

|                                          |        |
|------------------------------------------|--------|
| (a) <u>Length of Buy</u>                 |        |
| Length of time before mdse. emerges | \|\|\|\|\| |
| Time spent analysing mdse.               | =====  |
| Time when money is brought into question | =====  |
| Money changes hands | \|\|\|\|\| |
| Time until seller leaves | \|\|\|\|\| |
| (b) <u>On/Off Camera</u>                 |        |
| On Camera                                | xxxxxx |
| Off Camera                               |        |
| (c) <u>Voice Volume</u>                  |        |
| High                                     | .....  |
| Medium                                   | ÷÷÷÷÷  |
| Low                                      | .....  |
| (d) <u>Body Positions</u>                |        |
| Standing                                 | ΔΔΔΔΔ  |
| Sitting                                  | ▽▽▽▽▽  |
| Leaning                                  | ↑↑↑↑↑  |
| (e) <u>Body Movement</u>                 |        |
| High                                     | .....  |
| Medium                                   | ÷÷÷÷÷  |
| Low                                      | .....  |
| (f) <u>Hand Movement</u>                 |        |
| At Rest                                  | ~~~~~  |
| Pointing                                 | +++++  |
| Explaining                               | ooooo  |
| Clasped                                  | +++++  |
| Holding                                  | ≈≈≈≈≈  |
| (g) <u>Smoking</u>                       |        |
| Smoking                                  | xxxxxx |

Figure 1: Operational and behavioral coding categories and symbols used in the time-series analysis.

|                | 1                   | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     |
|----------------|---------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Length of Buy  | mmmmmm              | mmmmmm | mmmmmm | mmmmmm | mmmmmm | mmmmmm | mmmmmm | mmmmmm | mmmmmm | mmmmmm |
| On/Off Camera  | xx                  | xxxxxx | xxxxxx |        |        |        |        | xxxxxx | xxx    | xxxx   |
| Voice Volume   | .....               | ...÷÷÷ | ÷÷÷÷÷÷ | ÷..... | .....  | .....  | ÷÷÷    | ÷÷÷÷÷÷ | ÷..... | .....  |
| Body Positions | △△                  | △△△△△△ | △△△△△△ |        |        |        |        | △△△△△△ | △△△    | △△△△   |
| Body Movement  | ÷÷                  | ÷÷÷÷÷÷ | ÷÷÷÷÷÷ |        |        |        |        | ÷÷÷÷÷÷ | ÷÷÷    | ÷÷÷÷   |
| Hand Movement  | ≈≈                  | ≈≈≈≈≈≈ | ←≈≈≈≈≈ |        |        |        |        | ≈≈≈≈≈≈ | ≈≈≈    | ≈≈≈≈≈≈ |
| Location       | H4 <sup>I4</sup> H4 |        | I4     |        |        |        |        | H4     | I4     | H4     |

Figure 2: Time Series Record for Douglas (Buy #22).



Length of Buy

||||| ||||| ||||| ||||| ||||| ||||| ||||| ||||| ||||| ||||| |||||

On/Off Camera

xxx        xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxx

Voice Volume

Body Positions

AAA        AAAAAA AAAAAA AAAAAA AAAAAA AAAAAA AAAAAA AAAAAA AAAAAA AAA

Body Movement

...        ..... ..... ..... ..... ..... ..... ..... ..... ...

Hand Movement

~~~

Location

H3 I3 H3

1 2 3 4 5 6 7 8 9 10

Figure 3: Time Series Record for Kenneth (Buy #22).

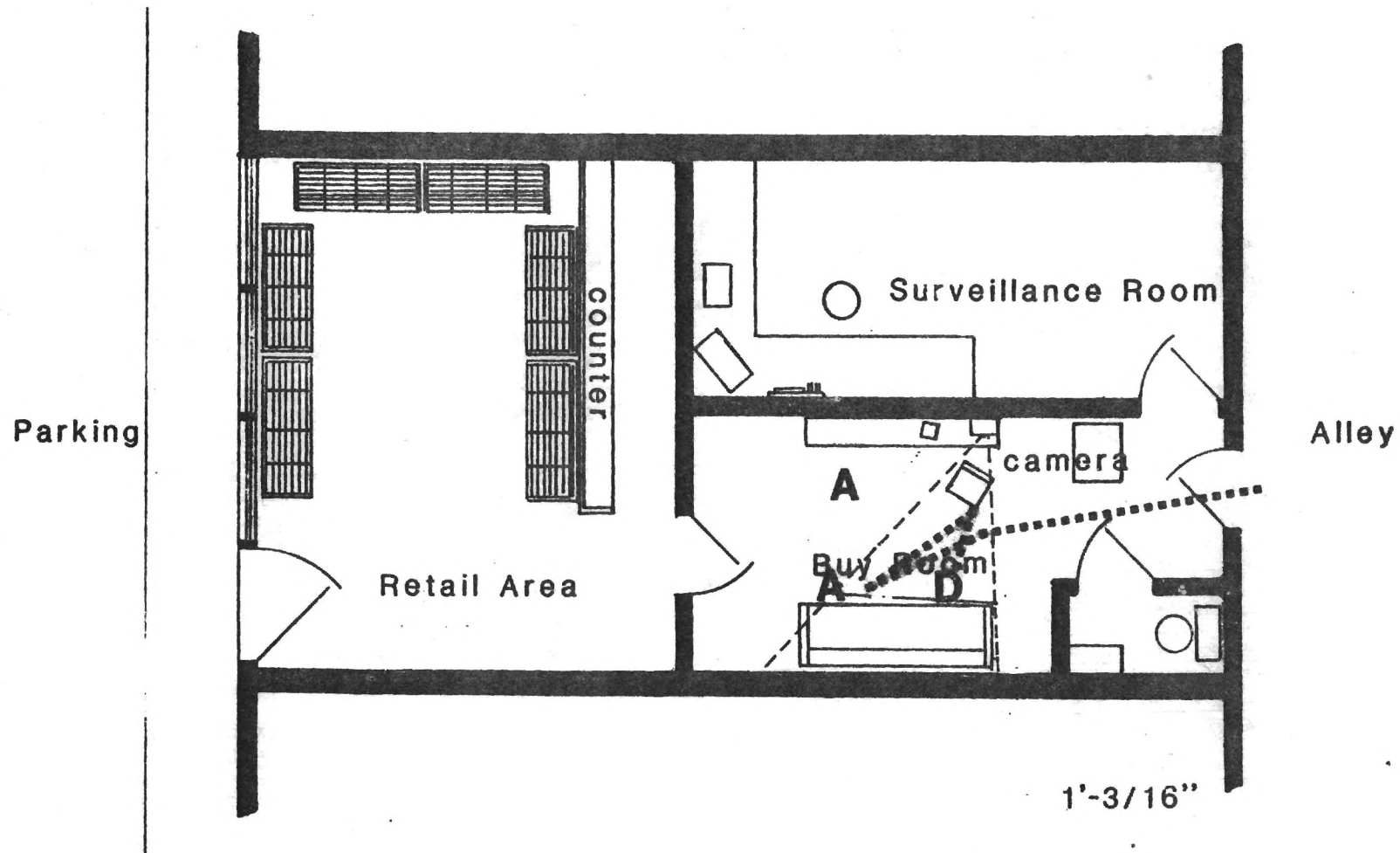


Figure 5: Location Plan for Douglas (D) and the Agents (A) During Buy #22.

Parking

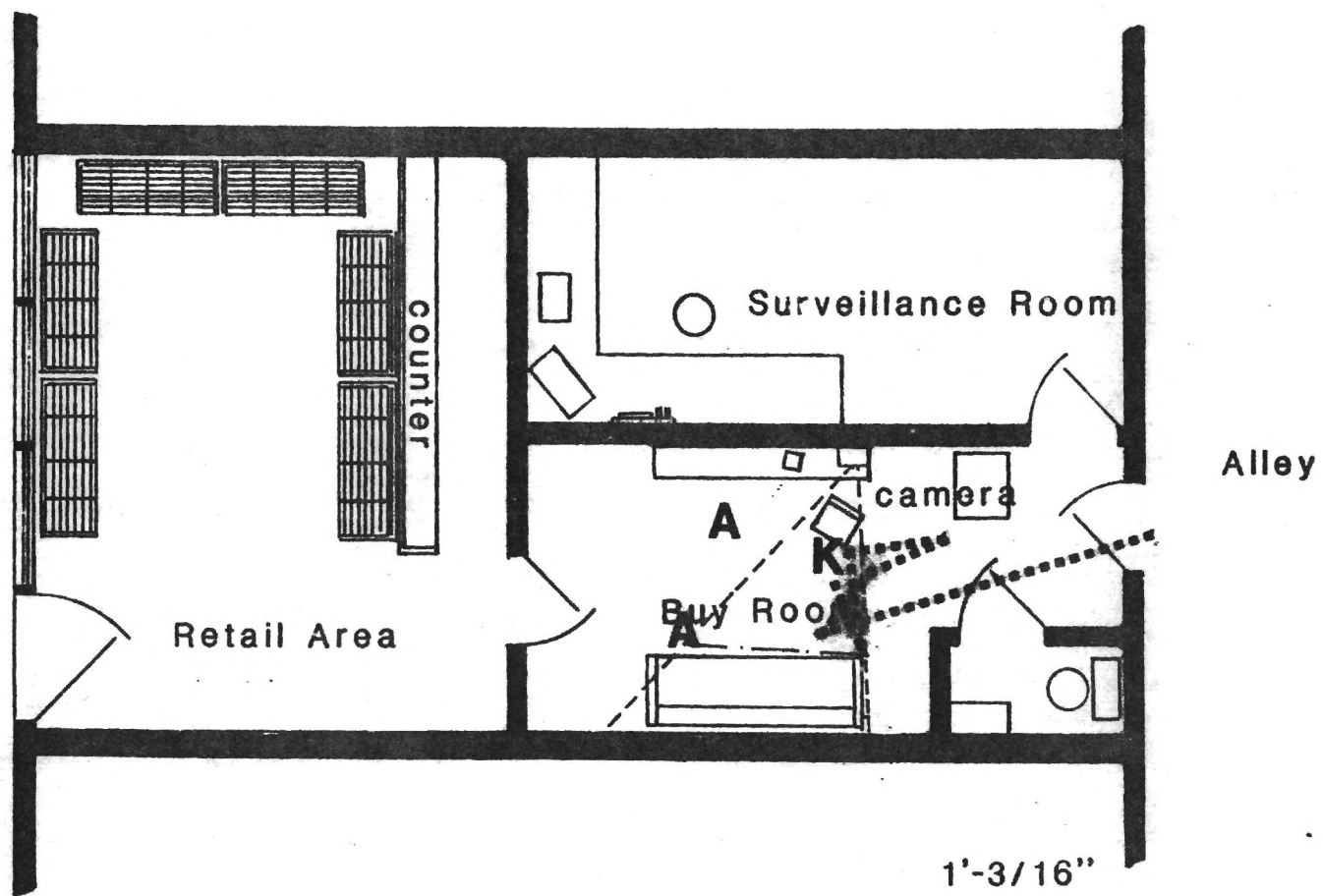


Figure 6: Location Plan for Kenneth (K) and the Agents (A) During Buy #22.

Because no plans of the warehouse operation were ever obtained, a location plan for Lloyd could not be plotted.

As the observers gained experience in viewing and taking data off of the tapes, a number of behavioral patterns were noticed. Furthermore, as the time-series data for the returning subjects were plotted, additional patterns became apparent. The tabular analysis and technical assessments contained in the following sections of this report are an attempt to document these patterns. Before proceeding to those findings and recommendations, it should be noted that the rather heuristic search-test-search again procedures that were used place considerable limitations on the conclusions that can be drawn from this study. However, since neither the contents nor the quality of this videotape material was known at the outset, this was probably the most systematic way to proceed. Still, the reader should be cautioned that what follows represents a preliminary assessment based on a limited sample, and should not be treated as a conclusive body of findings.

Videotape Quality

The inferences that can be drawn from the analysis of any data are constrained by the original qualities of those data. In the case of the "sting" videotapes, several serious technical and procedural problems were found.

In general the quality of the tapes studied, in terms of visual resolution and contrast, ranged from poor to fair. In the warehouse and residential operations the resolution and contrast were so low that it was quite difficult to detect small body movements or the passing of small items and money without viewing the tapes five, ten, or more times. In some cases, the action in the foreground was completely lost against the background and could not be identified or classified. While this problem was less severe on the storefront and record store tapes, a lot of behavior

was still lost because of poor resolution and low contrast. Part of this is due to the videotape technology itself. Since television reduces all images to a sequence of 525 horizontal lines, it is very difficult to obtain the kind of resolution associated with Super-8 or 16 mm. film.

Another major factor contributing to the poor resolution and contrast was lighting. Generally, the poorest tapes came from the operations having the lowest lighting levels (the warehouse and residence) while the better tapes came from the settings with greater illumination (the storefront and record store). The levels of lighting used in each operation apparently resulted from the GBI's understandable interest in maintaining an atmosphere that was typical of the setting being simulated. Thus, the storefront and record store operations were brightly lit with the type of fluorescent fixtures commonly found in retail establishments. On the other hand, the lights in the living room of the residential operation were turned off during the daytime, making the daylight admitted through an outside window the primary source of illumination. This created a very dim and diffused light which resulted in low contrast and poor resolution. The warehouse was even darker. So dark, in fact, that on one tape it wasn't even possible to determine the sex of the subject! Generally, it was quite difficult to detect facial or gestural details on the low-light tapes.

The low light problem was further complicated on some of the residential and warehouse tapes if the agents or subjects wore white clothing or if bright lights appeared in the picture. When either of these situations arose automatic aperture adjustments in the camera were triggered which effectively wiped out all detail in the remainder of the picture. This occurred because most video cameras must compensate for the brightest images projected on the vidicon tube in order to prevent permanent "burns" which destroy the tube. However, its effect on the darkest of the "sting" tapes was to destroy what little image there was. This was a

particular problem in the warehouse operation when a garage door near the back of the space was opened to admit a "customer's" car and simultaneously admitted intense glare from reflected sunlight which obliterated the rest of the picture. Flashing Christmas tree lights created a similar problem in the residential operation.

In addition to resolution problems that made it difficult to determine precisely what the subjects were doing, the tapes also presented a depth-of-field problem that made it difficult to determine precisely where the subjects were located in the room. While there was no problem determining location from left to right, movements toward or away from the camera were difficult to localize. The root of this problem lies in the fact that the floor was out of camera range in several of the operations, so there were no cues to indicate precisely where a person whose shoulder and elbow appeared in the foreground was located. This was especially a problem in the record store operation where the room was very narrow and the camera was focused directly on a sofa placed against the far wall. Unless a subject or agent touched the sofa, it was very difficult to determine how close to it they actually were, despite the fact that the lighting and resolution were the best of any of the sites studied.

Another major problem on the tapes was the audio quality. In two of the operations the audio quality was so poor that it was often difficult to determine what was being said. In the warehouse operation, the subjects often wandered far beyond microphone range. The combination of the poor video resolution and the poor audio pick-up even made it difficult to determine who was talking on some of the tapes. While the poor resolution and contrast, low light, depth of field, and audio difficulties exhaust the problems encountered on the tapes themselves, there were other problems associated with videotape quality.

Long periods when the subject was off camera were found on many, if not most, of the tapes reviewed. Part of this was related to the way in which the

cameras were operated. In almost every transaction analyzed, the videotape did not start until the subject was already in the room and the negotiation already in progress. Even after the camera was turned on it was not possible to comprehend the image on the tape until the camera had a chance to warm up and the image stabilized. In some cases, particularly short transactions, this lack of information about the initial entry and greeting made it very difficult to interpret what was going on.

Another problem occurred when one subject moved into camera range in such a way that he or she obstructed the view of other subjects or agents. While this type of obstruction is common in any naturalistic observation, some of the problems encountered on the "sting" tapes seem to be attributable to camera placement. For example, in the residential operation a shoulder-height camera was concealed by a one-way mirror surrounded by provocative photographs that were intended to lure the subjects into close camera range. However, whenever a subject approached this mirror their presence in the foreground obstructed all of the other activity in the room. In some cases, the loss of this information was critical for understanding what was taking place.

From a research viewpoint, the most serious problem found on the tapes was the fact that the subjects were often out of camera range altogether. Although a handful of the subjects were on camera 100 percent of the time, the average for the 68 subjects whose transactions were analyzed in detail was only 72.73 percent. One subject was only on camera 9.80 percent of the time during an eight and one half minute transaction! Exposures of 50 percent or less were found for 17 of the 68 subjects, or one fourth of the total. A more detailed breakdown on exposure times is included in Appendix C. The average percentages of time that the subjects were on camera varied between the four operation studied, as follows:

| | |
|----------------------------|--------|
| warehouse (28 subjects) | 79.33% |
| storefront (15 subjects) | 78.28% |
| residence (4 subjects) | 62.61% |
| record store (21 subjects) | 53.52% |

Further variations were found between two different camera set-ups at different sites. In the storefront and record store operations, fixed cameras were always focused on the same parts of the room. However, in the warehouse and residential operations the cameras were rotated and refocused to track the primary subjects or zoom in on the major portion of the transaction taking place, such as the passing of money from the agent to a suspect. The average percentages of time that the subjects were on camera varied between the fixed and moving camera operations as follows:

| | |
|--|--------|
| fixed camera (storefront & record store) | 67.50% |
| moving camera (warehouse & residence) | 77.96% |

Obviously, the moving cameras picked up a bit more of the action than the fixed cameras. This was especially helpful since the two operations that utilized the moving cameras were also the ones that had the lowest light levels and the poorest image resolution. Despite this partial compensation for poor resolution, it was still difficult to analyze the behavioral patterns of subjects who were off camera between 22 percent and 32.5 percent of the time. If the interpersonal relations between subjects are to be analyzed, this problem is complicated further. Table 1 shows the percentages of time that each subject is on camera as a function of group size and the type of camera set-up used. Note that these data are for the suspects and their active associates only. A separate column for their uninvolved friends is also included for purposes of comparison.

| | <u>Singles</u> | <u>Doubles</u> | <u>Multiples</u> | <u>TOTAL</u> | <u>(Friends)</u> |
|---------------|----------------|----------------|------------------|--------------|------------------|
| Fixed Camera | 83.13% | 55.66% | 45.66% | 67.50% | 35.56% |
| Moving Camera | 93.03% | 70.93% | 69.93% | 77.96% | 41.67% |
| TOTAL | 86.97% | 65.02% | 58.23% | 72.73% | 36.80% |

Table 1: The percentage of each subject's time on camera as a function of the number of subjects and friends (but not agents) present.

Two things are quite apparent in Table 1. First, as the groups got larger, the percentages of time that any subject was likely to be on camera decreased for both types of camera operation. Second, the moving camera captured more of each individual's activity than the fixed camera for all group sizes. Obviously, the moving camera should capture more of each individual's behavior on tape than the fixed camera. However, when two, three, or four people came in together, the moving camera recorded only about 70 percent of their behavior which is probably not sufficient to analyze any patterns of behavior in detail. One final note on Table 1 is the fact that both camera set-ups were more effective in recording the behavior of the suspects and their associates than that of their tag-along friends. Although this is quite appropriate for identification purposes, the fact that their uninvolved friends were seldom on camera could severely limit the possibilities for using these tapes for research on the broader interpersonal aspects of criminal transactions.

Perhaps, the most important issue from an interpersonal viewpoint is how often all of the subjects were on camera simultaneously. Data for various group sizes and different camera set-ups are presented in Table 2.

| | <u>Singles</u> | <u>Doubles</u> | <u>Multiples</u> |
|---------------|----------------|----------------|------------------|
| Fixed Camera | 83.13% | 27.97% | 3.85% |
| Moving Camera | 93.03% | 56.41% | 30.00% |
| TOTAL | 86.97% | 41.86% | 17.86% |

Table 2: Percentage of time that all subjects and friends were on camera simultaneously.

From these data it is clear that when two or more subjects and their friends entered a "sting" operation together there were relatively few occasions during which all appeared on camera simultaneously. Although the moving camera again performed better than the fixed camera, percentages of simultaneous coverage in the range of 30 percent to 56 percent are not enough to conduct detailed analyses of interpersonal behavior for full transactions.

Note that due to time and fiscal limitations, comparable data for the agents who participated in these transactions were not analyzed. Therefore, the figures given in Table 2 should be regarded as upper limits of the percentages of time that all participants were recorded simultaneously for the various group sizes and camera set-ups. From these data it appears that the high percentages of time that one or more participants are off camera during the transactions would place severe limitations on the types of interpersonal analysis that could be conducted using these tapes.

This problem of having one or more of the participants off camera can be partially attributed to the fact that none of the camera set-ups covered the entire room in which the transactions were conducted. Table 3 shows the percentages of the floor area that were within camera range at each of the four "sting" operations studied. The maximum percentages of space covered by a fixed field of view and

the total percentages covered when the camera was fully rotated are shown separately. From these data it is clear that the subjects were actually on camera more of the time than would have been predicted from the amount of space that was within camera range. The only exception to this was for the rotating camera at the residential site, and this may be partially attributable to the small number of subjects analyzed at that site. Although these figures begin to explain why the subjects were frequently off camera, they do not alter the fact that the resulting loss of data limits the usefulness of these tapes for many kinds of behavioral research. On the other hand they do suggest that better subject coverage might be achieved if the cameras were placed so that they covered more of the rooms in which the transactions occurred.

| | <u>fixed</u>
<u>coverage</u> | <u>rotating</u>
<u>coverage</u> | <u>percent</u>
<u>on cam.</u> |
|--------------|---------------------------------|------------------------------------|----------------------------------|
| residence | 41.78% | 80.00% | 62.61% |
| storefront | 33.71% | 33.71% | 78.28% |
| warehouse | 31.79% * | 63.05% * | 79.33% |
| record store | 24.00% | 24.00% | 53.52% |

Table 3: Percent of space that was within camera range for each type of camera operation.

For the purposes of research on interpersonal behavior during criminal transactions, the overall quality of the "sting" videotapes studied was not very promising. The resolution on the tapes themselves was often too poor to permit the discrimination of facial and gestural details when the subjects were on camera. In addition, the individual subjects were often off camera as much as 50% of the

* Because no floor plans were available, the data for the warehouse site are estimates made from the tapes themselves.

time, and the period when all participants in a transaction were on camera simultaneously often amounted to less than 50% of the time. In order to use available videotapes of "sting" operations for any kind of systematic behavioral research, one would have to select tapes quite carefully on the basis of image quality and the amount of time the subjects appear within camera range. However, if given the opportunity to structure a "sting" from the outset, it would not be difficult to overcome most of the qualitative problems described above and to produce videotapes that would be very useful for many kinds of behavioral research. Several of these possibilities are discussed in later sections of this report.

Interpersonal Behavior

Despite the initial conclusion that the "sting" tapes reviewed in this study might be of limited use for behavioral research, the very existence of such rich visual records of criminal transactions poses a research potential that should not be dismissed prematurely. For example, while the tapes obtained from the GBI clearly present the researcher with some major problems, the technology exists to correct most of the qualitative deficiencies noted in the last section, particularly if the research benefits of such operational adjustments can be demonstrated. In this section and the next, the potential research benefits of the "sting" videotapes will be assessed in terms of the opportunities and limitations presented by the GBI tapes that have been reviewed. In the final section of the report, recommendations for improving the quality of the videotapes to more adequately meet the demands of behavioral research will be presented.

Traditional views of behavioral research would suggest that the interpersonal behavior exhibited during any given "sting" transaction is situation-specific and

that its proper analysis must incorporate a number of personal and other contextual factors that are not accessible using observational records alone. However, recent advances in the study of kinesics (Birdwhistell, 1970) and proxemics (Hall, 1966) have raised new possibilities for studying certain aspects of interpersonal behavior without having to consider supplemental archival data. Among the aspects of behavior that currently appear to be amenable to systematic research using naturalistic visual records alone are the following:

patterns and sequences of eye contact and gaze aversion.

initiation and reciprocation of verbal and non-verbal cues.

uses of props and distal objects as displacement mechanisms.

patterns and sequences of space apportionment and distancing strategies.

The key theoretical frameworks within which these observable manifestations of behavior can be analyzed to explain social interaction have been elaborated in detail by Argyle, 1967; Kendon, 1967; Sommer, 1969; Goffman, 1969; von Cranach, 1971; Altman, 1975; and Scheflen, 1976. This work will not be reviewed in detail here, except to indicate key areas in which it suggests possible linkages to the study of criminal behavior in naturalistic settings.

In general, studies have shown that eye contact, subtle tonal inflections, and non-verbal gestures like head tilts, eyebrow movements, and crossed legs play a significant role in synchronizing the participation of two or more people in a social situation and in signifying the relationships between those people. The detailed analysis of such patterns from the "sting" tapes could have the potential for determining the degree of complicity of the various parties in the criminal acts at issue, the degree to which the information they give is truthful, their allegiance to one another and to the agents, social or even pathological tendencies, and the manner in which the communication skills of the agents impact on the responsiveness of the subjects.

Studies have also shown that gaze aversion and displacement activities like tossing paper wads into a can or thumbing through magazines serve to cut off direct interpersonal contact, thereby lowering arousal and stress levels on the part of one or more of the participants in a social situation. With regard to the "sting" tapes, these patterns could be interpreted as indicators of tension or conflict among the subjects or between the subjects and the agents. They can also serve as indicators of avoidance or withdrawal from the situation and of covert attempts to manipulate the transactions to some advantage.

Finally, research has shown that patterns of interpersonal distancing and floor apportionment are quite reliable mechanisms for signifying the status of the various participants in a social situation and for signifying the range of behaviors that are considered appropriate within a social context. Therefore, such patterns observed on the "sting" tapes could be used to determine the relative dominance or submissiveness of the subjects or the agents, the types of interpersonal norms that are established and defended among the participants, and any subcultural or deviant departures from those norms on the part of individual subjects or groups of subjects.

Taken as a whole, the ability to use the "sting" tapes to analyze such behavioral patterns could lead to new insights on the manner in which certain types of criminals deal with and reinforce one another, and on the ways in which they seek and test out new opportunities among unacquainted associates. It could also be useful in assessing the effectiveness of the actions of undercover agents in comparable police operations. Thus, research findings on the behavior of the participants in undercover "sting" transactions could ultimately have applications to other crime scenes, such as bank robberies, hostage crises, or even isolated criminal acts against individuals or property.

Unfortunately, most of the research methods that Birdwhistell, Hall, and their colleagues have developed for analyzing social situations require visual records of a much higher quality than that found on the tapes reviewed in this study. Some of the difficulties that were encountered in trying to encode each type of data from the GBI "sting" tapes are summarized below.

Patterns of eye contact and gaze aversion were almost impossible to detect on the sample of tapes reviewed. The major problem seemed to be the poor resolution and low contrast that made it technically impossible to determine the position or focus of most subject's eyes. Even where eye movements could be roughly estimated, the fact that one or more of the subjects was often off camera made it difficult to identify the object of a person's visual attention. Even if one were to select only the best tapes for analysis, it is doubtful that the degree of image resolution characteristic of television would be sufficient for this kind of fine grained research.

The initiation and reciprocation of verbal and non-verbal cues was also difficult to detect on the sample of tapes reviewed. The effect of poor audio quality on the detection of verbal exchanges was discussed in the last section. The poor quality of the video image, particularly the low light levels in two of the operations, also made it quite difficult to detect subtle facial gestures and hand movements. In addition, the fact that many of the tapes did not start until the transaction was already underway and that some of the key participants often wandered off camera also created problems, because too much of the social context was lost. In effect, the tapes often failed to capture enough of the interpersonal context to enable the researcher to comprehend each participant's role in the transaction.

Although the audio problems and the substantial chunks of time that key participants were off camera could be resolved by simply selecting the best tapes,

the degree of image resolution generally found on videotape would greatly limit the value of those records for the types of data take-off called for by Birdwhistell, Kendon, and others. While gross body movements, such as crossing one's legs or turning one's head can be detected easily on tapes of moderate to high quality, the subtle winces and finger taps that provide so much of the data needed to comprehend non-verbal synchrony or dissynchrony are often lost among the alternating scan lines that make up the video image. The scan lines present an even greater problem if stop-action analysis is attempted, because minor facial or body movements lose almost all of their form and context when the action is stopped on videotape.

The use of props and distal objects as displacement mechanisms could be detected so long as the props and the objects used were fairly large and within camera range. For example, one subject who spent several minutes tossing a small football in the air right in front of the camera could be observed quite easily, while the behavior of another subject who fiddled with some of the merchandise lined up on the shelf next to the video camera made no sense at first. Later, when the floor plans of the setting were examined, it became clear that the focus of the latter subject's attention had been the objects on the shelf. Generally, with the exception that documentation of the locations of all manipulable objects in the room can explain certain behaviors directed beyond camera range, displacement activities presented the same analysis problems as those just described for non-verbal cues -- big things could be identified and small things couldn't.

Finally, the patterns and sequences of space apportionment and distancing mechanisms presented a mixture of research opportunities and limitations. So long as everyone was on camera, it was rather easy to determine where people were in relation to one another and to the contents of the room. The only major problems that occurred in this regard were when the subjects were located at different

distances from the camera along common lines of sight. In these cases, precise locations could only be established if the point where they touched the floor or some other reference point appeared on camera. On the other hand, the orientations of the subjects and their spacing from left to right could be determined on all but the poorest tapes studied. The reason that it was relatively easy to determine locations and orientations is that the position of the whole body is such a large-scale phenomenon that it was completely unaffected by the pattern of scan lines that had confounded the discrimination of finer details. Thus, resolution was not a problem in determining interpersonal spacing on the "sting" tapes.

However, this research opportunity was seriously diminished by the fact that many of the participants in the transactions were often off camera and that all of the participants were seldom on camera at the same time. From a research standpoint this means that while videotape is technically capable of providing adequate data for proxemic analyses, the context within which such data gain meaning was often lost on the GBI tapes. On the assumption that good behavioral research could be done on spacing behavior if only those tapes where the subjects always appear on camera are selected, the discussion of prospects for research in this area could be concluded at this point. However, if the full implications of proxemic behavior are considered, the possibility exists that the high percentages of time that the subjects were out of camera range might actually have been a function of normative behavioral pressures operating within the "sting" settings.

First consider that the underlying premise of Hall's concept of proxemics is that people will maintain distances between themselves that are appropriate to their current situation. The distance ranges that Hall specifies are summarized in Table 4. Many of these distances have been corroborated by subsequent research (see Altman, 1975). From Hall's definitions of the four levels of interpersonal involvement, it would appear that the social level would be the most descriptive of

the types of "sting" transactions being considered in this study. Thus, the subjects and agents should normally maintain from 4 feet to 12 feet between themselves during the transactions, except when they are passing money. Furthermore, Hall's definitions suggest that distances closer to 4 feet would indicate a fairly comfortable relationship between agents and suspects and that distances closer to 12 feet would indicate some caution or hesitation on the part of the suspects. Therefore, the suspects should often be expected to maintain from 7 feet to 12 feet between themselves and the agents, particularly on the initial visits or when negotiations hit a snag on subsequent visits.

| | <u>near</u>
<u>phase</u> | <u>far</u>
<u>phase</u> |
|----------------------|-----------------------------|----------------------------|
| intimate involvement | touching | 6" - 18" |
| personal involvement | 1½' - 2½' | 2½' - 4' |
| social involvement | 4' - 7' | 7' - 12' |
| public involvement | 12' - 25' | 25' and over |

Table 4: Typical of appropriate interpersonal distances for various levels of interpersonal involvement (adapted from Hall, 1966)

Having established that the subjects and agents will frequently require from 7 feet to 12 feet of space between themselves, attention is now directed to the maximum span of the camera ranges for the three sites for which detailed floor plans had been obtained (see Appendix A). These maximum left to right spans and the approximate widths of the sofas that appear in the center of these camera ranges are presented in Table 5.

From Table 5 it is apparent that the camera ranges at several of the sites were too narrow to encompass social interactions at the far phase. In fact, the

| | <u>camera</u>
<u>span</u> | <u>sofa</u>
<u>width</u> | <u>percent</u>
<u>on cam.</u> |
|--------------|------------------------------|-----------------------------|----------------------------------|
| residential | 11'-0" | 6'-0" | 62.61% |
| storefront | 9'-0 | 6'-0" | 78.28% |
| record store | 7'-0" | 5'-6" | 53.52% |

Table 5: Maximum widths of the camera range and of the sofas at three of the "sting" sites studied.

camera at the record store operation barely covered the near phase. Furthermore, if the agent was located near the center of the camera range (as was often the case in the residential operation), normal interpersonal spacing mechanisms would tend to drive the suspects and their friends out of camera range! At the record store, the agents frequently stood next to the sofa which placed them on the extreme right hand side of the picture. However, given the very narrow span of the camera image at that site, the net effect of the agent occupying such a position was also to drive the subjects out of range unless they had become fairly comfortable with the set-up and were willing to come within the near phase. The agents who ran the storefront and warehouse operations generally stayed just outside of camera range, on the right hand side of the picture. Interestingly, these two operations had much higher percentages of time when the subject were on camera than either the residential or the record store operations! Unfortunately, the strategy which was most effective for luring the subject into camera range, required the agents to stay out of the picture, thereby diminishing the opportunities for proxemic research.

Another noteworthy observation was that the subjects seldom sat on the sofas with the agents or the other subjects. Since all of the sofas would have required two or more users to come within the near phase of the social range, this observation could be taken as a rough indication that most participants were not all

that comfortable with the "sting" set-ups. In fact, the only time that the subjects and agents came within the near phase of the social range for any sustained period was when they conversed across a desk -- usually with the agent out of the picture.

With regard to territoriality or floor apportionment, it was noticed that the agents usually claimed the end of the room opposite the point where the subjects entered, and that the subjects rarely penetrated the agent's domain. A clear line of demarcation seems to have been maintained in all but 3 or 4 of the transactions. One or two of the subjects who crossed into the agent's end of the room began to act as if they were boxed in and started to pace back and forth -- particularly when the agents stood between them and the point of entry (or exit). Unfortunately, the high percentage of time that the participants were off camera made it difficult to make much sense out of this type of behavior.

Of the four aspects of behavior considered thus far, space apportionment and interpersonal distancing appear to be the most amenable to further research using the "sting" videotapes. This is especially true because full body movements are not vulnerable to the resolution problems that are characteristic of videotape recordings, unless the light conditions are extremely poor. On the other hand, unless large areas fall within the camera range, the very process being studied seems likely to drive the subjects out of view. No doubt, some of these problems can be corrected using other types of camera set-ups and wide-angle lenses. These possibilities are discussed in the final section of the report.

In general, it appears that the "sting" videotapes reviewed in this study are not particularly suitable for the analysis of fine-grained micro-kinesic phenomena such as eye movements and subtle facial gestures due to resolution problems inherent in the videotape technology itself. While most larger scale proxemic phenomena such as displacement activities and interpersonal spacing are less vulnerable to the shortcomings of videotape technology itself, they do require that

the cameras cover larger portions of the settings to be studied than were covered on the GBI tapes. Overall, the tapes that were reviewed seem to have a fairly limited application to research on interpersonal behavior during criminal transactions.

Spatial Considerations

Although the last section revealed that the "sting" tapes probably have limited value for the analysis of the kinesic and proxemic aspects of interpersonal behavior, there are at least two other aspects of interpersonal behavior which must be considered. These are the effects of time and the effects of space. Both introduce a number of factors relevant to the conduct of the type of transaction being considered and both are somewhat less restricted by the coverage and quality of the videotape image itself.

One of the main reasons for examining sequences of buys by the same individual or group of individuals was to identify any gross behavioral effects over time. For example, the respective lengths of a succession of transactions could serve as an indicator of the levels of trust or confidence that had developed between the subjects and the agents. One scenario suggests that the first visit should be quite short and the subsequent visits should be of longer duration as the suspects become more comfortable with the agents and with the remainder of the operation. Another, somewhat less likely, scenario would have the first visit be the longest one as the agents and the operation are "checked out" with the following visits taking progressively less time as the subjects become familiar with how the operation works.

In order to explore these possibilities further, the duration of each "sting" transaction was recorded using an electronic stopwatch. In addition to the total

elapsed time, the amounts of time spent inspecting the merchandise, negotiating a price, exchanging money, and hanging around after the sale was concluded were itemized separately. The only major problem encountered during the timing of these phases occurred when the camera didn't start until the transaction was already underway. In these cases it was impossible to determine the duration of the initial phase(s) of the process.

Unfortunately, the analysis failed to reveal any consistent temporal patterns. The lengths of the transactions tended to increase from one to the next as often as they tended to decrease. Of the seven individuals or groups that visited an operation three or more times, the buys got shorter over time for one, they got longer over time for another, and the other five showed no tendency either way. Although the transactions ranged in total length from one minute to over 28 minutes, the only behavioral factors that seemed to affect the duration were the nature or quantity of the merchandise offered for sale and the seller's personal agenda for pushing up the price or fraternizing with the agents. No additional effects were found for the various time periods within the transactions either.

Although this temporal analysis of a series of buys was inconclusive, it dealt with a class of data that was quite easy to record from most of the "sting" tapes. Given more complete sampling, it would appear that such measures of duration on successive occasions could provide a valuable supplement to the less accessible data on proxemic and kinesic patterns described earlier.

While looking at the effects of repeated visits on the length of "sting" transactions, an unexpected pattern was noticed. The average total duration and the average amount of time spent after the sale was concluded were both noticeably different for the warehouse and storefront operations than for the residential and record store operations. These data are summarized in Table 6.

| | <u>Length
of buy</u> | <u>Time Un-
til Sale</u> | <u>Time Af-
ter Sale</u> | <u>Percent
on Cam.</u> |
|--------------|--------------------------|------------------------------|------------------------------|----------------------------|
| warehouse | 7:53 | 5:33 | 2:20 | 79.33% |
| storefront | 8:48 | 6:40 | 2:08 | 78.28% |
| residence | 4:50 | 4:25 | 0:25 | 62.61% |
| record store | 4:33 | 4:02 | 0:31 | 53.52% |

Table 6: Average amount of time spent on the major phases of the transactions at each site.

The data in Table 6 indicate that the transactions average almost twice as long in the warehouse and storefront operations as those in the other two. The average amount of time the subjects lingered after the sale was more than four times as long at these two sites. Even the percentages of time that the subjects were on camera show a similar split.

From an examination of the videotapes it appeared that there were clear spatial differences between the two pairs of sites, with the differences in size being the most obvious. This was supported by the fact that the warehouse, with an estimated 1050 square feet, was the largest of the four buy rooms and the record store, with only 125 square feet, was the smallest. From a proxemic standpoint, such effects of the amount of space available on the amount of time spent in a space seem quite plausible since people with less room to maneuver may be drawn too close to each other, become tense, and want to conclude their business so they can leave. While this explanation held for the warehouse and record store, it fell apart when the storefront and residential operations were considered. On the tape, the storefront operation appeared to be much larger than the residence when, in fact they had 178 square feet and 225 square feet of space, respectively. Although these amounts of space could be interpreted as no real difference, the sharp differences found in the amounts of time spent in these two

operations require a real difference (in the opposite direction) if size is to be considered the primary contributing variable.

Even though the room size explanation proved to be less than satisfactory, its potential relevance to proxemic analysis made it worth pursuing further. For example, the reversals in apparent and actual size between the storefront and residential sites might have been affected by lighting levels. It has been mentioned earlier that the lighting in the storefront was quite bright and uniform while in the residence it was dim and diffused. Although there are no methods available for specifying the effects of illumination on the appearance of room size, it seems plausible that brighter lights could make a one room appear larger than another room that has slightly more floor area, but much less light. To control for this possibility, the data in Table 6 were resorted according to light level and room size. The effects of floor area on the amounts of time spent under two different lighting conditions are shown in Table 7.

| | <u>Square
Footage</u> | <u>Length
of buy</u> | <u>Time Un-
til Sale</u> | <u>Time Af-
ter Sale</u> | <u>Percent
on Cam.</u> |
|-----------------------|---------------------------|--------------------------|------------------------------|------------------------------|----------------------------|
| warehouse (dim) | 1050 * | 7:53 | 5:33 | 2:20 | 79.33% |
| residence (dim) | 225 | 4:50 | 4:25 | 0:25 | 62.61% |
| ----- | | | | | |
| storefront (bright) | 178 | 8:48 | 6:40 | 2:08 | 78.28% |
| record store (bright) | 125 | 4:33 | 4:02 | 0:31 | 53.52% |

Table 7: Effects of room size on the lengths of the transactions for dim (warehouse and residence) and bright (storefront and record store) settings.

* Estimated:

The data in Table 7 clearly indicate that when light levels were held approximately constant, the amount of time spent during the transactions was always longer for the larger space than for the smaller space. This provides some support for the notion that room size is an important factor in the average duration of "sting" transactions. When the percentages of time that the subjects were on camera is considered, Table 7 also provides limited support for the proxemic interpretation of these effects. Under both lighting conditions, the subjects were on camera considerably less often in the smaller space than in the larger space. In terms of interpersonal distancing this suggests that in order to maintain appropriate distances between one another the participants were forced to the periphery of the smaller rooms and, therefore went out of camera range. This is somewhat counterintuitive, since there was actually much more space that was out of camera range in the larger rooms (particularly the warehouse) than in the smaller ones. Another interpretation of the effects of room size on duration has been offered by DeLong (1981) who has recently reported that the experience of duration is directly proportional to the perceived scale of surrounding space. Although Hall's proxemics and DeLong's space-time relativity can both account for the findings in terms of room size, neither can explain the effects of illumination on the experience of scale or duration.

This analysis creates an awkward situation -- room size seems to have played an important part in the duration of the "sting" transactions, but the data are confounded by the fact that the relevant effects of illumination are unknown. This impasse may be due to the fact that the impact of people on one another's behavior has been much more thoroughly conceptualized and researched than the impact of space on the behavior of individuals or groups. However, during the past five years several papers have appeared in the environmental psychology literature which have presented new conceptual frameworks for linking the architectural aspects of environment to interpersonal behavior. Two of these frameworks are Benedikt's

model of Isovists and Isovist Fields (Benedict, 1977) and Archea's model of Visual Access and Visual Exposure (Archea, 1977). Both are based on the presumption that the primary attributes of the physical environment relevant to behavior are the geometric arrangements of walls, doors, and other surfaces or openings that directly affect the quantity and quality of visual information that can be acquired or conveyed from a given position within a bounded setting. Both models elaborate the mechanisms through which architectural systems of surfaces and openings can channel, obstruct, concentrate, disperse, or otherwise localize information about surrounding conditions and events. Both models also specify techniques for measuring the relative amounts of information available at different locations within a given system of physical barriers and channels.

Although neither Benedikt nor Archea clarify the relationships between illumination and the perception of space or time, both introduce other spatial issues which may outweigh the significance of room size or lighting levels in considerations of interpersonal behavior. Among these are the issues of shape and configuration -- especially the manner in which both affect the ability to see a space or whatever is taking place within a series of connected spaces. More specifically, the visual access and exposure model assumes that each person is the center of a constantly changing field of ambient visual information to which their own behavior is a continuous adjustment. One's awareness of emerging social opportunities varies as a function of their ability to see the events and activities occurring around them. This is defined as visual access. Similarly, one's accountability for their own behavior varies as a function of the probability that their own actions can be seen from the areas around them. This is defined as visual exposure (Archea, 1977). Within this framework the likelihood of being aware of changing social opportunities and the likelihood of being held accountable

for one's own actions is theoretically related to a person's location and orientation within an architecturally defined space.

Applying his model to the analysis of interpersonal behavior, Archea suggests that, as the users of a particular environment sense the potentials for seeing and being seen at different locations they can selectively position themselves to attain their own immediate goals and objectives. For example, people who are unsure of what others expect of them in an unfamiliar situation might seek high access and low exposure so that they will become aware of most events before those events necessitate an unexpected change in their own behavior for which they might be held accountable. Finally, in an attempt to link these behavioral effects to the organization of space, Archea contends that visual access or the ability to see is highest around the periphery of a space and lowest near the center. Conversely, visual exposure or the probability of being seen is generally highest near the center and lowest toward the periphery.

Several aspects of the visual access and exposure model have been partially corroborated in various architectural settings (Archea, 1980). One situation to which this type of analysis has been applied is the bank robbery -- specifically the degree to which spatial factors influence the selection of banks to rob and the execution of the robbery. Part of this research, involving interviews with bank robbers, has been completed (Dickey, 1980). Since a bank robbery is in some ways analogous to a "sting" transaction, some of Dickey's principal findings are summarized below in the hope that they might provide new insights on the impasse involving room sizes and lighting levels that was discussed earlier.

Despite the fact that none of the twelve robbers interviewed expressed any real concern for the presence of surveillance cameras, security guards, or the use of dye bombs, a major concern expressed by two thirds of them was a fear of being seen by people passing the outside of the bank while the robbery was in progress.

This fear of high visual exposure was expressed in terms of the robbers' preference for banks with few windows through which the customer and teller areas could be seen from the outside. In addition to their concern for being seen, half of the bank robbers expressed a separate need to be able to see the entire spatial layout of the bank as the robbery progressed. They made specific note of their need to be aware of everyone who was present and of all locations from which unseen persons might suddenly emerge and turn the element of surprise to the bank's favor. Seven of the twelve went one step further and indicated that the very presence of a closed door to a room that they couldn't see into would discourage them from robbing a particular bank! Overall, the primary concerns of most of the bank robbers interviewed were (a) the degree to which high visual access would enable them to gain control over all persons present and (b) the degree to which low visual exposure would prevent them from being seen in the process of doing so (Dickey, 1980).

What Archea's model suggests and Dickey's findings tend to support is that the key attribute of space relevant to criminal behavior is not size, but rather the extent to which its physical configuration reveals or conceals the places where unknown observers might be lurking. In effect, this is a measure of visual (or acoustic) complexity. If the "customer" can see all of the places that he can be seen (or heard) from, then he is free to concentrate on the transaction and pursue any social agenda that he desires. However, if he feels that he cannot see all of those places, he remains vulnerable throughout the transaction, never quite sure that he and the other people that he actually sees are the only ones aware of what's going on.

Upon reexamining the layouts of the GBI "sting" operations reviewed in this study (see Appendix A), it appeared that visual complexity accounted for many of the temporal effects reported in Table 6. For example, the warehouse was a large

open room with a few pieces of used furniture stored in it. From the videotapes it appeared to have only two doors -- a garage door and the main entry door. As the subjects entered they had to pass through the rest of the space to get to the corner in which the agents had set up a desk to do their "business". The subjects could see all of the remainder of the room and the two doors leading outside from this corner. Although they had plenty of places to wander off to, the subjects remained on camera 79.33% of the time at the warehouse site. Their transactions averaged 7:53 minutes in length and they stayed around for an average of 2:20 minutes after the sale was concluded, which was the longest for any of the four operations studied.

Similarly, the storefront transactions took place in an open, well lit, back room that could not be seen from the street. In order to get in, the customers had to pass through the front sales room, from which they were admitted to the back. Once in the back room, most sat on a sofa from which they could see everything else in the room, including a door to the one space that they had not already passed through. Here the transactions averaged 8:48 minutes in length and the subjects lingered around after the sale for an average of 2:08 minutes. In most respects, the two operations at which the longest and most relaxed transactions occurred and where the subjects tended to stay around the longest after the sale had been concluded, both provided the subjects with ample opportunities to see the entire operation and created few opportunities for being observed without their knowledge while business was being transacted.

By contrast, in order to get from the carport to the living room of the residential operation, the subjects had to pass through a kitchen from which they could see the doors to four rooms along a back hallway which they generally would not be allowed to enter. Although they were aware that there were other rooms in the back of the house, the subjects could not see those rooms from the portions of

the living room in which they usually stood or sat. As the transactions progressed, the subjects were constantly vulnerable to being seen or heard through an open archway that led to the kitchen and hallway. Interestingly, the average transaction at this operation took only 4:50 minutes and the subjects stayed around for an average of only 25 seconds after the deal had been finalized, which was the shortest of any of the operations studied.* One pair of subjects even walked out with two cans of beer that they had been given to entice them into staying longer! From the sample of tapes that were reviewed it also appeared that comparatively few customers ever returned for a second visit to the residential operation.

A comparable pattern was found at the record store where the transactions were conducted in a very small, well lit, back room. Although this room was similar to the one used in the storefront operation, it was much smaller and the customers were required to enter from a back alley instead of through the front sales area. This meant that they would have no knowledge of who was present in the sales area while their transaction was taking place. In addition to the doors to the back alley and the sales room, there were also two other doors leading to rooms the contents of which were unknown. No matter how the subjects positioned themselves in this room, there was always a door just a few feet behind them. Here, the transactions averaged 4:33 minutes and the subjects left within an average of 31 seconds after concluding a sale. Most of the subjects never even sat down. On several occasions the sellers either left with their merchandise, only to complete the sale in the alley, or sent an accomplice in to make the sale while they stayed out in the car. In effect, the two operations with the shortest and most tense negotiations and where the subjects tended to leave as soon as the deal was completed, both denied the subjects a first hand opportunity to see several

* Since there were only 4 returning subjects at the residential site, this figure was checked against a sample of non-returning subjects and found to be representative.

spaces from which they obviously could be seen or heard.

For comparison purposes these qualitative attributes of the four GBI operations studied are summarized in Table 8.

| | <u>warehouse</u> | <u>storefront</u> | <u>residence</u> | <u>record store</u> |
|-------------------|------------------------------------|------------------------------------|---------------------------------------|-----------------------------------|
| general openness | very open, with some clutter | very open, with no visual barriers | ambiguous, with a hidden hallway | very tight, hemmed in |
| size and lighting | very large, with dim light | ample room, with bright light | ample room with dim, diffused light | very small, with bright light |
| doors | only 2 doors are apparent on tape | 2 doors, including entrance | 6 doors, including 4 in the hallway | 4 doors, including entrance |
| concealed spaces | subjects enter via adjacent spaces | subjects enter via adjacent space | unseen rooms along hallway | unseen rooms behind 3 doors |
| visual access | good view from the corner | good view of one unknown door | poor view of the kitchen, hallway | no view of rooms behind doors |
| exposure | low exposure in the corner | very low exposure in the back room | can be seen and heard through archway | always a door just behind subject |

Table 8: Major qualitative attributes of the selling spaces at the four "sting" operations studied.

If the temporal effects reported in Table 6 are compared with the spatial attributes reported in Table 8, it becomes apparent that the major point of demarcation between those settings in which the suspects appeared to be at ease and those in which they appeared to be tense was the extent to which they could see or be seen by those who might have been sharing the setting with them. In

general, the longer and more relaxed transactions tended to occur where the selling spaces were fairly open and the subjects were steered toward locations from which they could keep their eyes on the rest of the operation. The shorter and more stressful transactions tended to occur in spaces in which the subjects either could not monitor adjacent rooms that they knew very little about or were surrounded by doors to rooms about which they knew nothing. The temporal effects of the two most revealing and the two most concealing settings are summarized in Table 9.

| | <u>length
of buy</u> | <u>time un-
til sale</u> | <u>time af-
ter sale</u> | <u>percent
on cam.</u> |
|------------------------|--------------------------|------------------------------|------------------------------|----------------------------|
| revealing
settings | 8:18 | 6:03 | 2:15 | 78.93% |
| concealing
settings | 4:36 | 4:06 | 0:30 | 54.96% |
| TOTAL | 7:12 | 5:28 | 1:44 | 72.73% |

Table 9: Comparison of the temporal effects for the most visually revealing (warehouse and storefront) and most visually concealing (residence and record store) settings.

Although too few settings and transactions were considered to permit the preceding analysis to be treated as conclusive, it does open new possibilities for incorporating spatial effects into the analysis of crime scene behavior. With the possible exception of the record store operation, these results strongly suggest that the relevance of physical space to the analysis of human behavior extends far beyond the effect of room size on interpersonal distancing to encompass the manner in which architectural layouts affect the availability of the visual and auditory information upon which the regulation of behavior in the presence of others necessarily depends. Although the importance of visual surveillance for detecting the preconditions and occurrence of criminal acts has been elaborated by

Newman (1972, 1980) and Jeffery (1977), the possibilities presented by the isovist and visual access and exposure models shift the vantage point away from the potential victims and witnesses and toward the criminal perpetrators of the acts themselves.

With regard to the "sting" tapes, if the degree of composure or personal control exhibited by subjects engaged in criminal activity can be shown to relate to their ability to see what is going on around them and to the likelihood of their being seen by others, then much can be learned about the kinds of physical settings which facilitate or inhibit criminal activity. From a research standpoint, one major advantage of this kind of spatial analysis is that it relies as heavily on a thorough analysis of the space in which the behavior occurs as it does on the quality or coverage of the observational media used to record that behavior. The major disadvantage is that, to date, far less research has been done on this aspect of spatial behavior than in the areas of kinesic or proxemic communication. Therefore, until the behavioral effects of different positions in various spatial layouts are more fully understood, or until the quality of the media used to record "sting" transactions is improved, some combination of the types of spatial, proxemic, and kinesic analysis already described may provide the most useful tool for studying the patterns of interpersonal behavior exhibited during criminal transactions.

Conclusions and Recommendations

Before any final conclusions are drawn from this study, it is important to reiterate that the videotapes used in the analysis were gathered by the Georgia Bureau of Investigation for the purpose of identifying and apprehending criminal offenders, and not for the purpose of conducting scientific research on criminal behavior. Therefore, no assessment of the value of these videotapes for the purposes of behavioral research, whether positive or negative, should be

interpreted as an evaluation of the degree to which these recordings fulfilled their initial objectives.

With this qualification in mind, the prospects for systematic behavioral research appear to be mixed, given the image quality and spatial coverage of the videotapes reviewed in this study. Clearly, most of the small muscle movements commonly associated with non-verbal communication could not be detected on the sample of tapes that were examined. Therefore, it was concluded that a detailed analysis of kinesic patterns of interpersonal cueing or synchrony would only be possible with much better image resolution and contrast and with cameras placed such that more of the activity could be recorded. Even then, only the grossest types of body movements could be subjected to detailed kinesic analysis.

Because the effects occur at a much larger scale, proxemic analysis of spatial apportionment and interpersonal distancing is less vulnerable to the deficiencies of image resolution and contrast than kinesic analysis. Unfortunately, on the sample of tapes examined in this study, one or more of the subjects were out of camera range so often that no meaningful proxemic analysis would have been possible. However, it was concluded that if the cameras had been operated so that more of each setting could have been covered from the beginning to the end of each transaction, then very detailed proxemic analyses could have been conducted using the GBI tapes, even without a significant improvement in the quality of the video image. Such analyses would have been further enhanced by the placement of discernable spatial markers on the floors and walls so that the locations of the subjects could have been determined more accurately.

The analysis of the effects of spatial layouts on interpersonal transactions is substantially enhanced by the fact that much of the data required to interpret spatial behavior depends on an accurate description of the setting in which that behavior occurs. Since detailed floor plans were available for three of the "sting"

operations studied, it was actually possible to determine the behavioral options that existed at locations that were both on and off camera and to conduct a preliminary analysis of some very general behavioral effects. Although such an analysis would have been enhanced by more complete camera coverage, it was concluded that the GBI tapes were of sufficient quality to permit a partial analysis of spatial behavior from the standpoint of visual access and exposure, as long as accurate floor plans were available to assist in characterizing the spaces that could be seen from each location or the spaces from which each location could be seen.

In general, the GBI tapes offered few possibilities for analyzing the fine grained details of the activities occurring during "sting" transactions. With better camera coverage, most of the GBI tapes would be sufficient for analyzing certain molar aspects of such interpersonal behavior. Finally, so long as adequate spatial descriptions are available, many of the spatial aspects of the "sting" transactions would appear to be subject to general analysis using the GBI tapes. Overall, it would appear that the "sting" tapes have some value for the analysis of interpersonal behavior during criminal transactions, but that such research will generally require a high degree of selectivity and methodological invention on the part of the investigator. However, with relatively few changes in the spatial and operational aspects of undercover "sting" operations, videotapes of a much higher quality for detailed behavioral analysis could be obtained. Several suggestions to this end are outlined below.

To begin with there appear to be several conflicts between setting up a "sting" operation to assure the proper identification of each suspect and in setting one up to capture the full complexity of a socio-spatial situation. Generally, identification requires relatively close shots of the suspect's face and of their participation in the exchange of money. By contrast, situational analysis generally requires comprehensive visual coverage of all portions of the setting at all times.

Although these two objectives may often be in conflict, there are several ways to resolve them both simultaneously within a single undercover operation.

First, in order to assure more complete coverage of the space in which the transactions are to occur, it is important that the camera be located at a point from which the whole room can be viewed at once. Generally, this will be possible from the extreme end of an elongated space or from any corner of a relatively square space. By directing the camera toward the opposite side of the room from either of these locations, it should be possible to record all parts of the setting without having to aim or refocus. Whenever possible, the camera should be directed along the longest diagonal or axis of the space being observed. If recording across one of the shorter dimensions of a space is unavoidable, a wide angle lens should be used. Where possible, the camera should also be mounted above shoulder height so that people in the foreground cannot obstruct the view.

Second, in order to establish the location of all of the subjects within a room it is important that as much of the floor area as possible be within camera range. The best clue to where a person is located is where his or her feet hit the floor. Tile or linoleum patterns on the floor can also be helpful in determining a subject's precise location. Other spatial markers such as light poles and hanging plants should be used to locate subjects appearing in the extreme foreground of the video image.

Third, in order to keep all of the subjects within camera range throughout a transaction it is first necessary to provide adequate support for a full range of their activities directly opposite the camera. Comfortable seating, ashtrays, magazines, and tables on which to display their merchandise should all be available within the central portion of the video image. Care should be taken to provide enough room for the agent(s) and up to 4 subjects with an average of seven feet of space between them. The agents who operate the "sting" should be instructed on

where to locate themselves so that they don't force the subjects out of camera range. Ample room for pacing should also be provided in the foreground or background. In addition to providing for their physical comfort, the operation should be arranged so that the subjects can see into all of the spaces around them while the transaction is in progress. Furthermore, by leading the subject through as many of the adjacent spaces as possible on their way into the buy room, it should be possible to minimize their concerns about spaces from which they could be seen, heard, or approached by others. Similarly, aside from obvious closets, it would also be helpful to avoid suspicious doors within the selling space that lead to rooms which the subjects cannot enter or see.

Finally, in order to improve the quality of the videotape image itself, lighting levels should be used which provide a high degree of figure-to-ground contrast, thereby allowing the videotape camera to attain its highest resolution capability. In some instances this may require the selection of "front" operations that normally have higher lighting levels than private homes or warehouses. Care should also be taken to position the lighting so that it illuminates the subjects' faces and activities within the "sales" area. Sources of illumination or glare should never be within camera range, not only because they could damage the vidicon tube, but also because they introduce excessively high contrast which can wipe out the rest of the video image. Finally, the camera should always be started before the subjects enter the room so it has a chance to warm up and the image has time to stabilize. If a false start should happen to occur, the tape can always be erased and reset for another subject.

If the above criteria can be incorporated in the initial planning stages of undercover "sting" operations, then a high percentage of the videotapes produced should be quite useful for research on the interpersonal aspects of criminal behavior. Furthermore, most of the modifications suggested for operating and

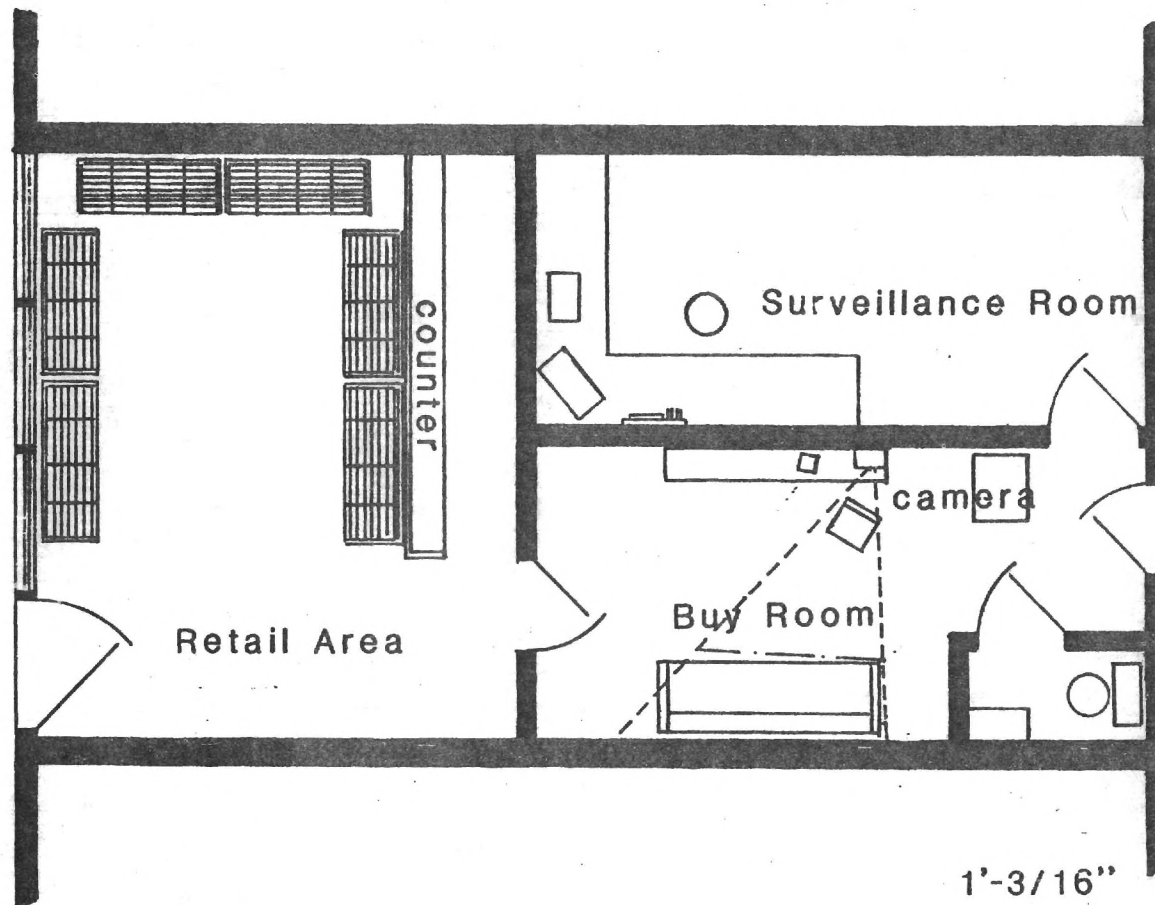
recording "sting" operations could enhance the primary mission of indentifying suspects just as much as they open new research opportunities in areas like macro-kinesics, proxemics, and the effects of spatial layouts. It is understood that some other law enforcement agencies have begun to utilize operational criteria such as these in setting up their "sting" operation and have obtained higher quality videotape images as a result. Such criteria might also be applicable to the development of behavioral research in other situations, such as the use of bank surveillance systems. Overall, any improvement in the availability of high-quality videotape records of actual criminal transactions promises to open a number of new avenues for research on the interpersonal and spatial aspects of crime scene behavior.

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Appendix A

Floor Plans of Three "Sting" Operations



Parking

Retail Area

counter

Surveillance Room

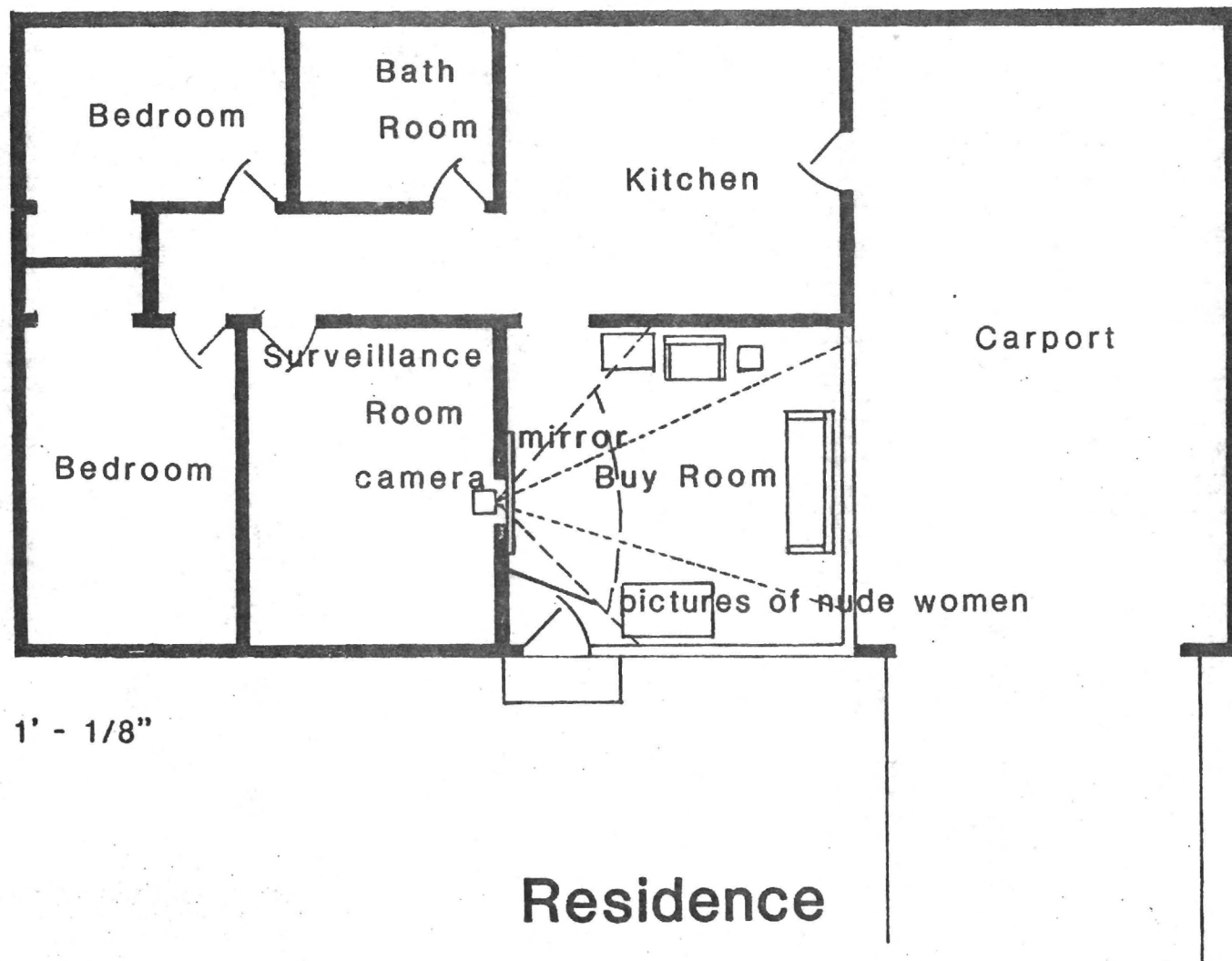
Buy Room

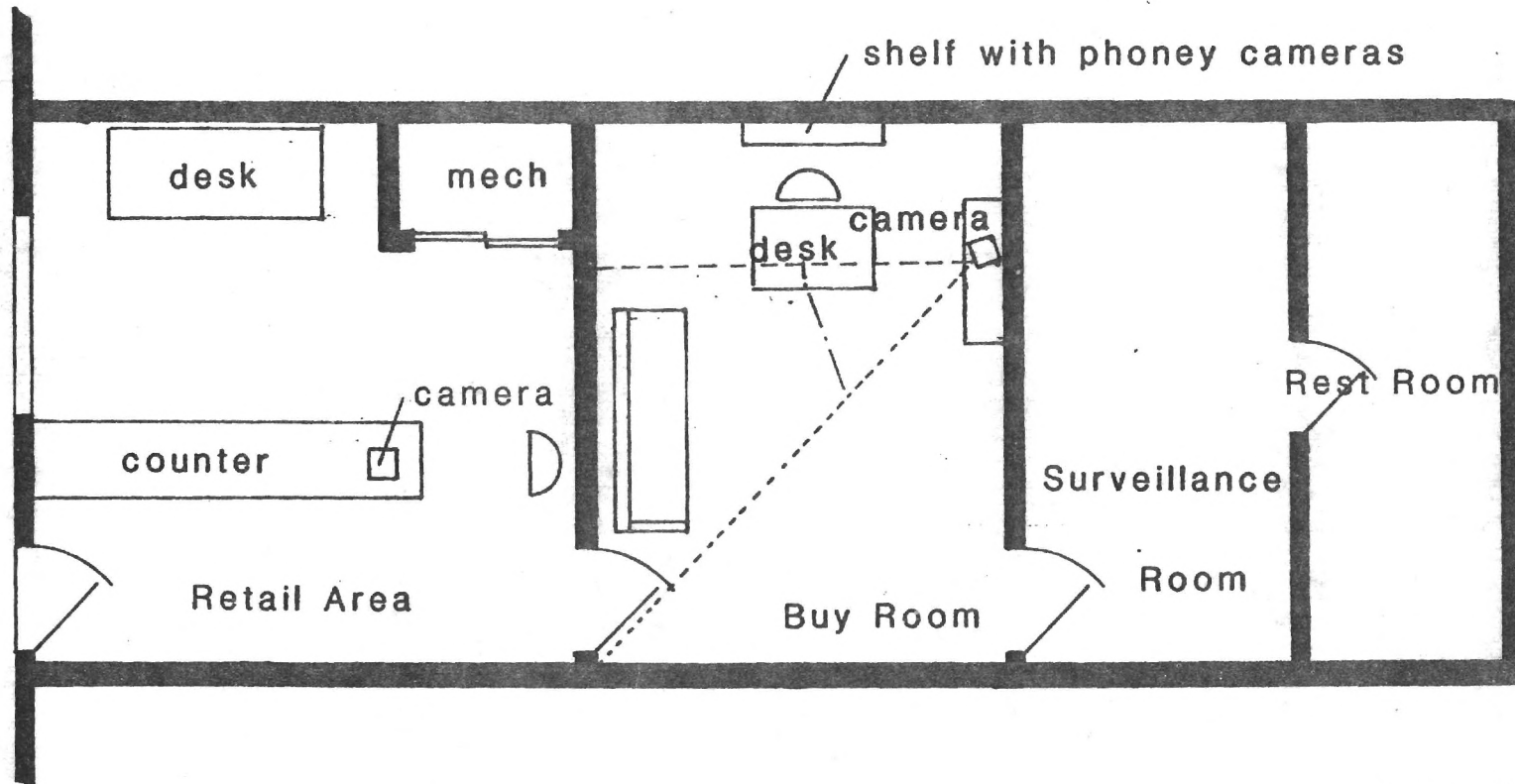
camera

Alley

1'-3/16''

Record Store





1'-3/16"

Storefront

Appendix B

Narrative Descriptions of the Returning Subjects

Record Store

Alfred and Paul

Buys: 34 and 35

Alfred and Paul work as a team and appear to have been in before. This not a complete set of buys.

Alfred and Paul came in with two girl friends in buy 34. Alfred had a stereo to sell. After the sale was completed, Paul tried to get the agent to reconsider a TV set that he had refused to buy earlier. The agent agreed to look at it and a deal was eventually struck. Throughout the transaction Alfred and Paul seemed nervous and kept moving around the room. The girl friends seemed oblivious to what was happening and often got in the way. Shortly after the first deal was concluded Alfred and Paul returned without the girls and made a quick sale on a TV.

Douglas and Friends

Buys: 4, 11, 12, 13, 14, 15, 17, 18, 22, 39, and 60

Douglas appears to be the leader of a small group who look to him for guidance. The group includes his brother, Kenneth, and an unrelated male named Jess. This may be a complete set of buys for this group.

Buy 4 was longer than most of the others, with most of the time spent haggling over the price for the merchandise. Douglas was very aggressive when it came to arguing about the price. He also tended to ask for much more than (he knew) the agents were willing to pay. In buy 11 he was so dissatisfied with what he was offered that he took his merchandise and walked out. Over time, however, Douglas became quite comfortable with the operation and each successive transaction was concluded more rapidly.

Apparently Douglas called and saw the agents frequently outside of the record store because as more buys were concluded the agents seemed to know more

about him personally, but they seldom talked about his personal life during the transactions. Douglas and his friends usually assumed the same positions in the selling area. So did the agents. Douglas' group also maintained an ample distance between themselves and the agents throughout the series of buys.

Although Douglas took the lead in the first six transactions, his friend Jess finally struck out on his own and came in with another friend in buy 17. He was so encouraged by being able to sell his own merchandise that he returned alone a few hours later to sell another CB radio that he had just shoplifted. Jess and Kenneth came in together during buy 36, but that tape was so bad it was discarded from the sample.

As time went on the agents let Douglas know that they had begun to trust him and were considering letting him in on a really big deal. He seemed cautious, but interested. Shortly thereafter, Douglas decided that he needed to buy some of his merchandise back from the agents to avoid being sent to jail. At about this time the record store was robbed and the agents accused Douglas of having something to do with it. Douglas seemed to be totally intimidated by this and accepted an absurdly low price for some merchandise he had to sell. On the next buy Douglas stayed in the car while his brother, Kenneth, came in and made the sale.

Later Jess returned with a friend who also had something to sell. Although Jess seemed to have graduated to leadership status, he still had none of the confidence initially exhibited by Douglas.

Residence

Richard and Earl

Buys: 47 and 50

Richard and Earl work as a team and appear to have been in before. This is not a complete set of transactions.

Most of the time in both buys was spent bringing the merchandise into the house. After they placed the items in the middle of the room, Richard and Earl both paced around a lot. Although they didn't appear tense, they did seem to be more anxious to leave the house than to stay around and chat with the agents. At one point the agents gave them both a beer and when the deal was finally concluded they took the cans with them instead of hanging around until they were finished.

In both buys, most of the time was spent inspecting the merchandise and very little time was spent haggling over price. The agent sat on the sofa both times and Richard and Earl both tended to stay in the same part of the room.

Storefront

Arthur

Buys: 10, 12, and 25

Arthur seems to work alone. Although this is probably not a complete set of buys, the first two transactions appear to be his first visits to this operation.

Arthur was very tense and moved around a great deal. He used his hands to explain and describe things to the agent. His hands seemed to move continuously. His location in the room was directly related to the position of the agent and he generally stayed fairly close to the agent. The length of Arthur's transactions increased with each successive visit. This seemed to have had less to do with the magnitude of the transactions than with Arthur's interest in learning more about the operation.

On his last buy, Arthur came in after having been up all night. Although he seemed tense, he still was in full control and his voice volume remained steady.

The negotiation took a long time. Although Arthur attempted to get every dollar he could, the agents didn't yield. He left as soon as the deal was concluded.

Fat Jack

Buys: 6, 11, and 39

Although Fat Jack brings a friend in on his first visit, he generally seems to be quite independent. This is definitely not a complete set of Jack's buys.

Fat Jack was apparently interested in getting to know the agents and the operation. His first two buys were very tense. On his first visit he brought a friend who was higher than a kite. After a while the friend left to go to the bathroom and then came back somewhat calmed down. Jack was continually moving from place to place, his hands were always moving in fast jerky motions, and his speech was fast and loud. The actual dealing did not take very long. There was a lot of social conversation and Jack was very quick to volunteer information about himself and where he lived.

His last buy (in the sample) apparently occurred after he had been in a number of times. He now sat on the sofa. His body movements were minimal, although he still conversed with his hands. In contrast with his earlier visits, he now seemed quite relaxed and the whole transaction became a 28 minute social visit during which only one credit card was sold. Jack seemed so relaxed at this point that he hardly cared about the sale. The agents also let Jack think that they had taken him into their confidence by asking if he could arrange a big night on the town for some "important men".

Although Jack sat on the chair in front of the agent's desk for the first two buys, he moved over to the sofa during the last visit. During each of his visits the door to the room remained open and the transactions were conducted with no apparent attempt to lower voices.

Laura

Buys: 28 and 29

Laura appears to be a novice who is just learning the ropes. While these two buys may not be a complete set, they do appear to be her first two visits to this operation.

Laura brought one credit card on her first visit and seemed to be checking out the set-up. The agents sat behind the desk and Laura sat on the end of the sofa. She said very little and moved very little. However, she seemed to listen intently to whatever the agents had to say. Apparently having been satisfied with the results of her first visit, Laura returned shortly thereafter with a lot of credit cards (most of which were not bought). The second buy was longer than the first due to the additional time needed to analyze the large number of cards that Laura was trying to sell.

Pete

Buys: 5, 7, 8, 9, 19, 20, 22

Of all the suspects studied, Pete appears to be the most professional. Except for a woman friend who accompanies him on his first visit, Pete always comes in alone. This appears to be a complete set of Pete's buys.

Pete felt out the situation on his first two visits. During both transactions he kept his distance from the agents and was off camera most of the time. After he got the feel of the operation he came back a third time with a lot of credit cards to sell. During the visit he remained on camera for a much longer period than before. This may have been due to the fact that the agents had moved behind the desk, thus enabling Pete to move into camera range without moving closer to the agents. Pete positioned himself in the same part of the room during most of his subsequent buys and rarely ventured into other areas. Buy 8 was Pete's longest

transaction, and its length was apparently due to the number of cards he was trying to sell.

Pete maintained his "cool" throughout most of the transactions and gave the impression that he was very experienced at what he did. Unless he was handling the merchandise, his hands were generally at rest or in his pockets. He was always seen smoking or with a matchstick in his mouth, which he periodically adjusted with his hands. Most of his buys were conducted in business tones and the agents' efforts to get to know Pete met with little success. Buy 19 was an exception to this. It opened with Pete sitting back on the sofa, apparently relaxed and very much at ease. Although he still kept the agents at a distance, the conversation was much more social than on his other visits.

Pete's last buys were more business like. He remained very soft spoken, though he seemed to be fully aware of the potential consequences of his actions. His body movements also suggested that Pete was in complete control of himself. The length of his transactions always seemed to be determined by the amount of merchandise he had to sell.

The only person that ever came in with Pete was his girl friend, who accompanied him on his first visit. She seemed very tense and never stopped walking around the room. She had the wallet in her purse. Shortly after she gave the wallet to Pete she left while he completed the sale.

Warehouse

Mac and Monroe and Friends

Buys: 3, 9, 11, 12, 24, 26, and 28.

Mac seems to be a seasoned operator who works with local teenage recruits such as Monroe, George Brown, and Jimmy. This seems to be almost a complete set of Mac's buys, but there is reason to believe that his accomplices may have

come in on other occasions.

By comparison to most of the other tapes, these were not very good because the poor sound quality made it very difficult to hear what was going on. The camera also frequently shifted from Mac to Monroe and back again. Whenever they sat down, both generally assumed the same positions in the room -- Mac in the chair in front of the agent's desk and Monroe on the sofa next to the desk. Monroe generally seemed more tense and cautious than Mac. For example, Mac frequently sat back with his arms stretched along the chair arms while Monroe usually sat straight up or leaned forward from the sofa. Mac did all of the negotiating and seemed eager to converse with the agents. He also lit a cigarette at about the same point in each transaction. Mac (who was rather fat) seemed rather lethargic and only seemed to move when he had to. By contrast, Monroe moved around quite a bit and always seemed anxious to leave.

Although Monroe appeared to be Mac's primary accomplice throughout the first several visits, George Brown emerged in the number two spot on the last buy. Brown and his friend, Jimmy, had also came in together on an earlier occasion to sell a couple of stereos. From the tapes sampled, it wasn't clear whether George and Jimmy worked with Mac and occasionally ventured out on their own or whether they initially worked independently and joined forces with Mac and Monroe later.

Lloyd

Buys: 4, 5, 6, 25, and 72

Lloyd works for a retail chain and frequently comes in to sell tools that he has stolen from his employer. This is probably not a complete set of Lloyd's buys.

Lloyd's first visit was spent feeling out the situation. There was some social conversation, but most of the time was devoted to business. The second buy was much more social insofar as Lloyd took a lot of time to talk to the agents about

things that were not related to the sale. Lloyd seemed very interested in getting to know the agents. For example, on his second visit he stayed around and talked for 8 minutes after the sale had been concluded. Any signs of apprehension exhibited on the first visit were gone by now and Lloyd appeared to have accepted the agents as friends. His subsequent buys were a mixture of business and pleasure.

During his later buys Lloyd was treated like a regular customer. A great deal of time was devoted to the inspection of merchandise during each transaction because Lloyd usually brought in a lot of tools. An equal amount of time was usually spent socializing, but only after the deal had been concluded.

On his last visit Lloyd brought two friends along -- Vince who dealt with the agent and another male who merely watched. It appeared that Lloyd had already told them about the set-up and both seemed relaxed. Lloyd appeared especially relaxed as he leaned back and chatted with the agents during buy 72.

Thomas and Lester

Buys: 19, 20, 21, 22, 23, and 27

Thomas and Lester seem to work as a team, although Lester frequently comes in alone. While there may have been later buys, this appears to be an unbroken series of buys, beginning with their first visit.

On their first visit, Thomas and Lester came in, transacted a fairly insignificant deal, and left quickly. They seemed to be checking the place out. Lester returned shortly thereafter to sell an organ. Although this buy took a lot longer, Lester remained standing throughout the negotiation and even stayed around for a while after the sale had been made. When they both came in together, Thomas usually dealt with the agent and Lester sat back and took it easy. Thomas appeared to be more businesslike and to be more sensitive to the potential consequences of what he was doing, whereas Lester seemed more interested in

getting to know the agents.

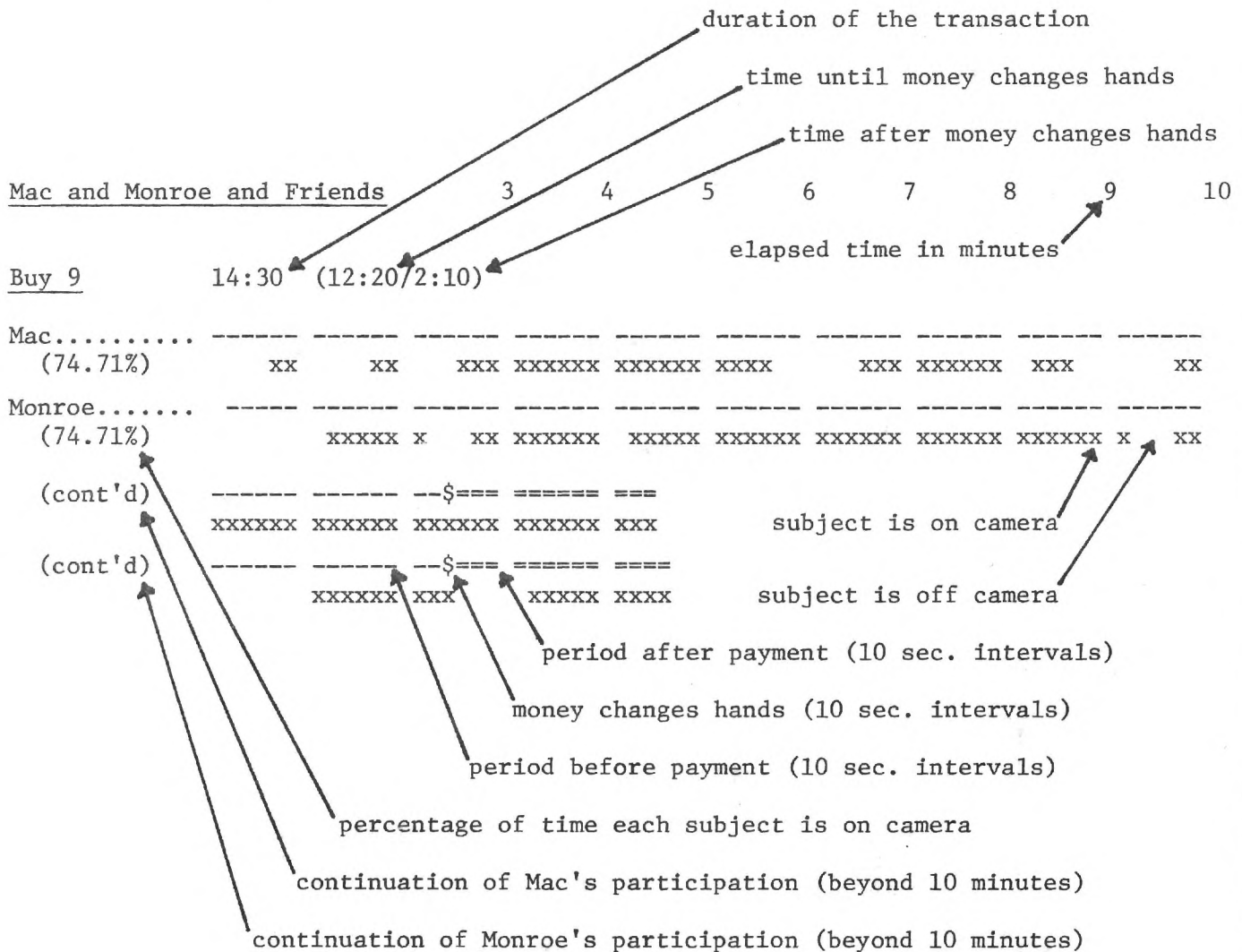
When Thomas and Lester came in together, they generally sat in the same places. When Lester came alone, he would generally remain standing throughout the transaction. They also tended to leave as soon as the deal was concluded when they were together. However, Lester usually stayed around for a minute or so when he was alone. The length of the buys was generally related to the amount of merchandise being sold.

Appendix C

Time Series Records for the Returning Subjects

Time Series Records

The duration of each transaction and the amount of time that each subject is on camera or off camera is presented on the following pages. These records are grouped according to (a) the operation, (b) the person or persons involved in each series of transactions, and (c) the "buy" number assigned by the GBI. The other symbols used in these condensed displays are shown below:



RECORD STORE

| | | | | | | | | | | |
|-----------------|---|---|---|---|---|---|---|---|---|----|
| Alfred and Paul | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|-----------------|---|---|---|---|---|---|---|---|---|----|

Buy 34 7:30 (6:50/0:40)

| | | | | | | | | | |
|---------------|-------|---------|---------|-------------|-----------|-------|-------|-----|----|
| Alfred..... | ----- | ----- | ----- | ----- | \$\$----- | ----- | ----- | \$= | == |
| (40.00%) | x | xx | x x | xxxxxxx | x | xx | x xx | x | |
| Paul..... | ----- | ----- | ----- | ----- | \$\$----- | ----- | ----- | \$= | == |
| (53.33%) | xx | xxxxxxx | xxxxxxx | xxx xxxxxxx | x | | | | |
| Friend #1.... | ----- | ----- | ----- | ----- | \$\$----- | ----- | ----- | \$= | == |
| (51.11%) | xx xx | xx | x x | xxx xxxxxxx | x | xx | xxx | | |
| Friend #2.... | ----- | ----- | ----- | ----- | \$\$----- | ----- | ----- | \$= | == |
| (15.56%) | xxxx | xxx | | | | | | | |

Buy 35 1:30 (0:40/0:50)

```

Alfred..... ---$== ==
(33.33%)          xxx

Paul..... ---$== ==
(77.78%)          xxxxxx xx

```

| <u>Douglas and Friends</u> | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|----------------------------|---|---|---|---|---|---|---|---|----|
|----------------------------|---|---|---|---|---|---|---|---|----|

Buy 4 9:20 (8:50/0:30)

```

Douglas.....-----$ $= ==
(19.64%)      xx                      x xxxxxxx xx

Friend #1....-----$ $= ==
(07.41%)      xx                      xx

```

Buy 11 5:30 (no buy)

| | | | | | | |
|--------------|-------|-------|--------|----------|----------|-------|
| Douglas..... | ----- | ----- | ----- | ----- | ----- | ----- |
| (36.36%) | x | x x | xxxxxx | | x xxx | |
| Jess..... | ----- | ----- | ----- | ----- | ----- | ----- |
| (60.61%) | x | xxxxx | | xxxxxxxx | xxxxxxxx | xxx |
| Kenneth..... | ----- | ----- | ----- | ----- | ----- | ----- |
| (21.21%) | x x | x | xx xx | | | |

Douglas and Friends (cont'd)

3

4

5

6

7

8

9

10

Buy 12 4:20 (4:10/0:10)

Douglas..... ----- \$=
(53.85%) x x xxxx xxxxxxxx xx

Jess..... ----- \$=
(56.00%) xx xx xx xxxxxxxx xx

Kenneth..... ----- \$=
(48.00%) xxx xxxxx xxxxx x

Buy 13 4:30 (3:50/0:40)

Douglas..... ----- \$ ====
(37.04% xx x xxx xxxxx

Friend #1..... ----- \$ ===
(62.96%) xx xxxxxxxx xxxxxxxx xxx

Buy 14 3:50 (3:40/0:10)

Douglas..... ----- \$=
(86.96%) xxx xxxxxxxx xxxxxxxx xxxxxx

Friend #2..... ----- \$=
(60.87%) xxx xxxxxxxx xxxxxx

Buy 15 3:20 (3:00/0:20)

Douglas..... ----- \$ ==
(60.00%) xxx xxxxx xxx xx

Friend #2..... ----- \$ ==
(80.00%) xxx xxxxxxxx xxxxxxxx xx

Buy 17 3:00 (2:30/0:30)

Jess..... ----- \$ ===
(94.44%) xxxxxxx xxxxxxx xxxxxx

Friend #3..... ----- \$ ===
(22.22%) x xxx

Buy 18 1:20 (1:10/0:10)

Jess..... ----- \$=
(100.00%) xxxxxx xx

Douglas and Friends (cont'd) 3 4 5 6 7 8 9 10

Buy 22 10:40 (9:40/1:00)

Douglas..... ----- \$== =====
 (42.19) xx xxxxxxx xxxxx xxxxxx xxx xxxxx

Kenneth..... ----- \$== =====
 (86.96%) xxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxx

Buy 39 2:30 (2:20/0:10)

Kenneth..... ----- -\$=
 (73.33%) xxx xxxxxx xxx

Buy 60 2:50 (1:50/1:00)

Jess..... ----- \$\$= =====
 (76.47%) xxxxxxx xxxxxx x x

RESIDENCE

Richard and Earl 2 3 4 5 6 7 8 9 10

Buy 47 3:40 (3:20/0:20)

Richard..... ----- \$\$=
 (52.38%) x x xxx xx xxxxx

Earl..... ----- \$\$=
 (81.82%) xxxxxx xxx xxxxxxx xxxxx

Buy 50 6:00 (5:30/0:30)

Richard..... ----- --\$\$=
 (47.22%) xxx x xxx x xxxxxxx

Earl..... ----- --\$\$= =
 (72.22%) x xxxxxxx xxxxxxx xxxxxxx xxxxxxx x

STOREFRONT

Arthur 1 2 3 4 5 6 7 8 9 10

Buy 10 2:00 (1:10/0:50)

Arthur..... ----- \$=====

(50.00%) x xx x

Buy 12 4:30 (4:10/0:20)

Arthur..... ----- \$ \$==

(81.48%) xxxx x xxxxxxx x x xxxxxxx xxx

Buy 25 10:20 (10:10/0:20)

Arthur..... ----- \$=

(67.74%) xx xxx xxxxxxx xxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xx

Fat Jack and Friend 2 3 4 5 6 7 8 9 10

Buy 6 6:50 (1:10/5:40)

Fat Jack..... ----- \$=====

(95.12%) xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxx x xxxxxxx xxxxx

Friend..... ----- \$=====

(29.27%) x x x x x x xxx x x x

Buy 11 3:00 (2:30/0:30)

Fat Jack..... ----- --\$==

(94.44%) x xxxx xxxxxxx xxxxxxx

Buy 30 28:20 (16:40/11:40)

Fat Jack..... -----

(100.00%) xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx

(cont'd) ----- --\$==

xxxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx

(cont'd) =====

xxxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xx

Laura 1 2 3 4 5 6 7 8 9 10

Buy 28 3:30 (3:00/0:30)

Laura..... ----- --\$ \$ ==
 (100.00%) xxxxxxx xxxxxxx xxxxxxx xxx

Buy 29 7:00 (6:50/0:10)

Laura..... ----- --\$ =
 (100.00%) xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx

Pete and Friend 1 2 3 4 5 6 7 8 9 10

Buy 5 8:30 (7:50/0:40)

Pete..... ----- --\$ \$ ==
 (9.80%) xx x xx

Friend..... ----- (((((((((((((((not present))))))))))))))
 (36.36%) x x x x

Buy 7 9:20 (3:30/5:50)

Pete..... ----- --\$ \$ == == == == == == == == == ==
 (33.93%) x xx x x x xxxxxx xx x xx xx xx

Buy 8 21:30 (20:50/0:40)

Pete..... -----
 (78.29%) xxxxxxx xx xxx xx x x xxx x xxxxxxx xx xxx xxxxxxx xxxxxxx

(cont'd) -----
 xxxxxxx xxxxxxx xxxxxx x xx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx

(cont'd) \$\$\$\$ \$ ==
 xxxxxxx xxx

Buy 9 5:10 (4:30/0:40)

Pete..... ----- --\$ == =
 (67.74%) xxxxxxx xxxxxxx xx x xxx xx x

Pete and Friend cont'd 2 3 4 5 6 7 8 9 10

Buy 19 4:00 (2:10/1:50)

Pete..... ----- \$=====

(100.00%) xxxxxx xxxxxx xxxxxx xxxxxx

Buy 20 1:30 (1:20/0:10)

Pete..... ----- -\$=

(55.56%) xxx x

Buy 22 16:30 (14:10/2:20)

Pete..... -----

(87.88%) x xxx xxxxx xxx xx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxx x xxxxxxx

(cont'd) ----- \$=====

xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxx

WAREHOUSE

Mac and Monroe and Friends 3 4 5 6 7 8 9 10

Buy 3 5:20 (3:40/1:40)

Mac..... ----- ----\$== =====

(96.88%) xxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xx

Buy 9 14:30 (12:20/2:10)

Mac..... -----

(74.71%) xx xx xxx xxxxxxx xxxxxxx xxxxx xxx xxxxxxx xxx x xx

Monroe..... -----

(74.71%) xxxxxxx x xx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx x xx

(cont'd) ----- --\$== =====

xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxx

(cont'd) ----- --\$== =====

xxxxxxx xxx xxxxxx xxxxx

Mac and Monroe and Friends (cont'd) 4 5 6 7 8 9 10

Buy 11 9:10 (5:10/4:00)

Mac..... ----- \$\$\$==== =
(85.45%) xxx x xxx xxxxxx xxx xxxxxx xxxxxx xxxxxx xxxxxx x

Monroe..... ----- \$\$\$==== =
(67.27%) x xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xx

Buy 12 1:00 (0:50/0:10)

Mac..... ----\$=
(83.83%) xxxxxx

Buy 24 4:10 (4:00/0:10)

George Brown. ----- -\$\$\$\$\$ =
(56.00%) x x xxxxxx x xx xx x

Jimmy..... ----- -\$\$\$\$\$ =
(20.00%) xxx x x

Buy 26 5:10 (2:40/2:30)

Mac..... ----- ---\$== ===== =
(100.00%) xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx x

Buy 28 8:00 (7:10/0:50)

Mac..... ----- ---\$\$-- ----- \$=====
(83.33%) xxxxxx xxx xxx xx xxxxxx xxxxxx xxx xxxxxx xxxxxx

George Brown. ----- ---\$\$-- ----- \$=====
(42.55%) xxxxx xxxxxx xx xxxxxx x xx

Monroe..... ----- ---\$\$(((((((((not present))))))))))))
(25.00%) x x xx

Jimmy..... (((not present)))-- ----- \$=====
(19.35%) xx x xxx

Lloyd and Friend 1 2 3 4 5 6 7 8 9 10

Buy 4 11:30 (8:50/2:40)

Lloyd..... ----- ---\$\$= =====
(100.00%) xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
(cont'd) =====
xxxxxxx xxx

Lloyd and Friend (cont'd) 2 3 4 5 6 7 8 9 10

Buy 5 8:10 (0:20/7:50)

Lloyd..... \$\$===== =
 (100.00%) xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx x

Buy 6 6:30 (6:10/0:20)

Lloyd..... ----- \$==
 (100.00%) xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxx

Buy 25 16:20 (7:20/9:00)

Lloyd..... ----- \$\$===== =
 (100.00%) xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx
 (cont'd) ===== =
 xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xx

Buy 72 12:00 (5:10/6:50)

Lloyd..... ----- \$ \$===== =
 (80.56%) xxxxxxx xx xxx xxxxxxx xxxxxxx xxxxxxx xxxxx xxxxxx xxxxxxx x
 Vince..... ----- \$ \$===== =
 (100.00%) xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx
 Friend..... ----- \$ \$===== =
 (41.67%) xxxxxxx xxxxxxx xxxxxxx xxxxx xxxxxxx xxxxx
 (cont'd) =====
 x xxxxxxx
 (cont'd) =====
 xxxxxxx xxxxxxx
 (cont'd) =====

Thomas and Lester 2 3 4 5 6 7 8 9 10

Buy 19 2:00 (1:40/0:20)

Thomas..... ----- \$=
 (100.00%) xxxxxxx xxxxxxx

Lester..... ----- \$= =
 (16.67%) xx

Thomas and Lester (cont'd)

3

4

5

6

7

8

9

10

Buy 20 9:00 (7:50/1:10)

Lester..... ----- \$= =====
(85.19%) xxx xx xxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx

Buy 21 7:10 (7:00/0:10)

Thomas..... ----- \$= =
(83.33%) xxx x xxxxx x xxxxxx xxxxxx xxxxxxxx x xx xxxxxxxx x

Lester..... ----- \$= =
(90.70%) x xxx xxx x xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx x

Buy 22 8:30 (7:50/0:40)

Thomas..... ----- \$= =
(77.08%) xxxxx x x xxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx x xxx

Lester..... ----- \$= ===
(70.59%) xx xxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xx xx xxx

Buy 23 6:10 (5:10/1:00)

Lester..... ----- \$===== =
(54.05%) x xx xxxxx xxxxxxx xxxxxxx x

Buy 27 7:20 (6:40/0:40)

Lester..... ----- \$== =
(88.84%) xxxxxx xxxxx x xxxxxxx xxxxxxx xxxxxxx xxx xxxxxxx xx